NOTE XIII.

CARCINOLOGICAL STUDIES IN THE LEYDEN MUSEUM.

BY

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N°. 4. [1])
(Plate 3—6).

LIST OF SPECIES.

Carpilodes tristis *Dana.*
Actaeodes Richtersii *de Man.*
Xantho punctatus *H. Milne Edw.*
" (Lachnopodus) tahitensis *de Man.*
" nudipes *A. Milne Edw.*
Lophozozymus superbus *A. Milne Edw.* (nec *Dana*).
Leptodius gracilis *Dana.*
Chlorodopsis areolata *H. Milne Edw.*
Heteropanope serratifrons *Kinahan.*
Pilumnus globosus *Dana.*
" tahitensis, n. sp.
Trapezia guttata *Rüpp.* (*Heller*).
" flavopunctata *Eyd. & Soul.*
Eriphia scabricula *Dana.*
Goniocaphyra truncatifrons *de Man.*
Xenophthalmodes Moebii *Richters.*
Geryon trispinosus *Herbst.*
Macrophthalmus crassipes *H. Milne Edw.*
" pacificus *Dana.*
Myctiris longicarpus *Latr.*
Leptograpsus Ansoni *H. Milne Edw.*
Pachygrapsus crassipes *Randall.*
Plagusia speciosa *Dana.*
Clistocoeloma merguiensis *de Man.*
Sesarma Aubryi *A. Milne Edw.*
" Edwardsii *de Man*, var. brevipes *de Man.*
" Smithii *H. Milne Edw.*
" atrorubens *Hess.*
" trapezoidea *Guérin.*
" quadrata *Fabr.*
" erythrodactyla *Hess.*
" bataviana, n. sp.
" barbimana, n. sp.
Eupagurus hirtimanus *White.*
Calcinus elegans *H. Milne Edw.*
" nitidus *Heller.*
Clibanarius vulgaris *Dana.*
" taeniatus *H. Milne Edw.*
Alpheus pachychirus *Stimpson.*
Hetairocaris orientalis, n. g. et n. sp.
Penaeus Macleayi *Haswell.*

1) See for N°. 1 and 2: Vol. III, p. 121 and p. 245, and for N°. 3: Vol. V, p. 150.

1. *Carpilodes tristis* Dana.

Carpilodes tristis, Dana, United States Exploring Expedition, Crustacea, T. I, p. 193, Pl. IX, fig. 7.

One male from Tahiti.

The nearest ally of this species is *Carpilodes laevis* A. Milne Edwards. Of this latter form I have before me a male specimen from Amboina, which I have described two years ago (Archiv f. Naturgeschichte, Jahrg. LIII, p. 236), and so I am able to indicate the differences. Unfortunately the cephalothorax of the specimen of *tristis* is somewhat asymmetric posteriorly, which is probably caused by a parasite in the left postero-lateral region of the carapace.

The cephalothorax of *Carpil. tristis* is a little more enlarged than that of the other species. The interregional grooves are somewhat more distinct; therefore the urogastric areola 4 M is already visible to the naked eye, which is not the case in *Carpil. laevis*. The posterior of the two grooves which border the third lobe of the antero-lateral margins, is considerably longer in *Carpil. tristis*, so that an imaginary line, which unites the extremities of these grooves, coincides with the posterior border of the areola urogastrica. The whole upper surface of the cephalothorax of *tristis* proves to be very minutely granulated when examined under a strong magnifying-glass, but when *Carpil. laevis* is observed under the same lens, this minute granulation is only seen on the front and close to the antero-lateral margins.

The legs of *Carpil. tristis* are shorter in proportion to the width of the cephalothorax, and the ambulatory legs especially have a less slender form. Thus e. g. the last pair of legs of *Carpil. laevis* are about as long as the breadth of the cephalothorax, measured at the incisions between the second and the third lobe of the antero-lateral margins; the posterior legs of *Carpil. tristis* are, however, much shorter than that distance.

The dark brown colour of the fingers of Dana's species extends for a short distance along the lower margin of the hand; this is not the case with the specimen of *Carpil. laevis* which lies before me, but the specimen figured by Milne Edwards (Nouvelles Archives du Muséum, T. IX, Pl. 5, fig. 3*a*) presents the same character.

The breadth of the cephalothorax is $15^2/_3$ mm., its length 9 mm. These measurements are for *Carpil. laevis* respectively $16^1/_2$ mm. and 10 mm.

Heller (Novara-Reise) likewise records *Carpil. tristis* from Tahiti, and according to Milne Edwards this species is rather common on the shores of New Caledonia.

2. *Actaeodes Richtersii* de Man.

Actaeodes Richtersii, de Man, in: Zoologische Jahrbücher, herausgegeben von J. W. Spengel, Abth. f. Systematik, Bd. IV, S. 412, Taf. 9, fig. 2. 1888.

An adult female and a very young male from Tahiti.

Both specimens agree entirely with the original description founded upon an adult male, but the hands of the female differ somewhat in form from those of the male. The hands are namely somewhat shorter and more slender; they are a little more than three times as long as high, whereas in the adult male the height of the palm measures a little more than a third of the length. As regards the proportion between the horizontal length of the palm and that of the fingers, the female agrees with the male, but the palm is distinctly more than once and a half as long as high. The inner margins of both fingers are entire and excavated for some distance at the distal end; that entire, untoothed part of the margin is slightly longer than half the length of the margin in the immobile finger, slightly shorter than half the length of the margin in the dactylus; as regards the number and the form of the teeth, the female agrees with the male. The hiatus between the fingers when closed is slightly larger than in the male.

In the young male individual the lead-coloured tint of the index does not yet cover the distal part of the palm, which is the case in the adult male.

Dimensions of the female:

Distance between the external orbital angles	$11^4/_5$ mm.
Greatest width of the cephalothorax . . .	$29^1/_4$ »
Length of the cephalothorax	$15^2/_5$ »
Length of the hand	$13^1/_3$ »
Height of the palm	$4^1/_6$ »

3. *Xantho punctatus* H. Milne Edw.

(Pl. 3, fig. 1).

Xantho punctatus, H. Milne Edwards; A. Milne Edwards, Nouvelles Archives du Muséum, T. IX, p. 199, Pl. VII, fig. 6. — de Man, in: Archiv f. Naturgeschichte, Jahrg. 53, 1888, p. 238.

The collection contains two fine adult specimens, a male and a female, of which the locality is unknown.

The two chelipedes of the female have the same size and agree entirely with the figure published by Milne Edwards. In the male the right chelipede (fig. 1) is considerably larger than the left. The black colour of the fingers extends somewhat farther in the male than in the female, as may be seen when comparing my figure of the larger hand of the male with that of the hand of the female in the »Nouvelles Archives."

Dimensions:	♂	♀
Greatest breadth of the cephalothorax	49 mm.	$42^2/_3$ mm.
Length of the cephalothorax . . .	30 »	26 »
Distance between the external orbital angles	$20^1/_2$ »	$17^4/_5$ »
Length of the larger hand	$40^1/_2$ »	
Height of the larger hand	$16^1/_2$ »	

4. *Xantho (Lachnopodus) tahitensis* de Man.

Xantho (Lachnopodus) tahitensis, de Man, in: Zool. Jahrbücher, Abth. f. System. Bd. IV, 1888, S. 418, Taf. IX, fig. 4.

A male and a young female from Tahiti.

The chelae of the female fully agree with those of the male; in both the right chela is the larger.

5. *Xantho nudipes* A. Milne Edw.

Confer: de Man, in: Zoolog. Jahrb. Bd. IV, 1888, p. 420.

A young male and a female, which are of the same size.

The female is ova-bearing. The whole upper surface of the cephalothorax presents the small impressions and grooves that are characteristic to this species, whereas, according to Milne Edwards, only the anterior part should be covered with them. In the male the right chelipede is the larger, in the female the left. The extremities of the fingers are scarcely excavate.

Dimensions:	♂	♀
Greatest width of the cephalothorax	$21^1/_2$ mm.	$20^3/_4$ mm.
Length of the cephalothorax . . .	$14^1/_4$ „	$13^3/_4$ „
Distance between the external orbital angles	9 „	$8^3/_4$ „

6. *Lophozozymus superbus* A. Milne Edw. (*nec* Dana).

Lophozozymus superbus, A. Milne Edwards, Nouvelles Archives du Muséum, T. IX, p. 205. — de Man, in: Archiv f. Naturgeschichte, Jahrg. 53, 1888, p. 269, Taf. X, Fig. 3*b*.

One male and an ova-bearing female from Upolu.

I have already said (l. c.) that *Lophozozymus superbus* A. Milne Edwards is a species different from *Lophozozymus superbus* Dana, the latter being identical with *Lophozozymus incisus* M. Edw. The cephalothorax of *Loph. superbus* A. Milne Edw. attains a breadth of 55 mm.; our two individuals from Upolu have, however, only half that size, though the female is already provided with eggs. The chelae of the female are equal in size, the upper margin of the palm is slightly and obtusely carinated along its proximal half and the fingers are slightly grooved in a longitudinal

direction. The black colour of the fingers extends a little on the base of the immobile finger in the male, but not in the female.

The upper surface of the cephalothorax is beautifully marbled with red on a paler ground-colour and the under surface presents numerous small round, reddish spots.

Dimensions of the female:

Breadth of the cephalothorax	27	mm.
Length „ „ „	16	„
Distance between the external orbital angles	13 1/4	„

This species has also been recorded from New Caledonia.

7. *Leptodius gracilis* Dana.

Chlorodius gracilis, Dana, l. c. p. 210, Pl. XI, fig. 13.
Leptodius gracilis, de Man, in: Archiv f. Naturgeschichte, Jahrg. 53, 1888, S. 287, Pl. XI, fig. 2.

Two young male specimens from Ponapé.

Quite as was the case with the male from the Java Sea, described by me (l. c.), also in these two individuals the cephalothorax is slightly more enlarged than in the typical specimens of *Leptodius exaratus*, in which the fingers of the hands have no hiatus between them, when closed. I therefore think *Leptodius gracilis* to be a »good" species. The upper surface of the cephalothorax is shining, what is denied by Dana.

The dimensions of the larger specimen are as follows:

Width of the cephalothorax	18	mm.
Length „ „ „	11	„

8. *Chlorodopsis areolata* H. Milne Edw.

Chlorodopsis areolatus, A. Milne Edwards, Nouvelles Archives du Muséum, T. IX, p. 231, Pl. VIII, fig. 8.

A young male from the Fiji islands.

In this species all the regions of the upper surface are very distinctly developed and separated from one another

by deep grooves. The regions 2 M are each divided by a distinct groove in two secondary areolae, the mesogastric areola 3 M is tripartite and separated moreover from the areola 4 M. The areola cardiaca 1 P is separated by rather deep grooves from the areolae 3 R and 2 P; the anterior margin of this areola 1 P presents a narrow emargination in the middle, but this groove does not extend to the posterior margin, so that the two halves of this lobule are united with one another posteriorly. The short close down, that presents the upper surface of the cephalothorax, does not cover the small rounded granules, which are found on the areolae. Sternum and abdomen are somewhat punctate, but appear for the rest nearly smooth.

The right chelipede is a little larger than the left. The wrist is armed with a rather acute tooth at the internal angle of the upper surface and with a very acute spine below that tooth at the inner angle of the under surface. The hands are covered above and externally with numerous conical, rather acute tubercles, that are arranged more or less in transverse series. The lower margin of the hand is rounded and smooth. The fingers are sulcate. The upper margin of the dactylus presents two rows of acute tubercles until the middle; some small tubercles are also found on the index, a transverse row of tubercles of the palm extending on the immobile finger. The inner margin of the index presents three conical teeth, that of the dactylus also three, of which the proximal one is the largest.

The ambulatory legs are covered with the same close down as the upper surface of the carapace and are moreover densely hairy on the margins; the mero-, carpo- and propodites are armed with small sharp spines on their anterior margins.

The cephalothorax is $11^{3}/_{5}$ mm. broad and $7^{4}/_{5}$ mm. long.

This species inhabits the seas of Australia, New Caledonia and the Fiji islands.

9. *Heteropanope serratifrons* Kinahan.

(Pl. 3, fig. 2).

Ozius? serratifrons, Kinahan, The Journal of the Royal Dublin Society, Vol. I, 1856, p. 118, Pl. IV, fig. 1.

Pilumnopeus serratifrons, Haswell, Catalogue of the Australian Stalk- and Sessile-eyed Crustacea, 1882, p. 70, Pl. II, fig. 1.

One young male, bearing a *Sacculina*, from the Pacific Ocean.

This species somewhat resembles *Heteropanope indica* de Man from the Mergui Archipelago, but differs by the following characters. The upper surface of the cephalothorax of *Heterop. serratifrons* is a little convex, especially anteriorly, that of *Heterop. indica* rather depressed. (I may observe that Kinahan describes the cephalothorax as »slightly depressed", Haswell however as »very convex, both in the transverse and the antero-posterior direction"!) The cephalothorax is also a little less enlarged in proportion to the length as that of *Heterop. indica*. The front is a little broader than in the Mergui species, the distance between the internal orbital angles being somewhat longer than the third part of the greatest width of the cephalothorax. Kinahan says in his latin diagnosis, that the postero-lateral margins are nearly twice as long as the antero-lateral (margine postero-laterali contractâ, quam margine ant. lat. fere bis longiore), and afterwards he says that the antero-lateral margin scarcely attains the edge of the genital region. In our specimen, which is evidently a young one, the antero-lateral margins are somewhat shorter than the postero-lateral, their length being about in proportion as 5 : 7. The antero-lateral margins are armed with four teeth, the first of which forms the little prominent external orbital angle. This first lobe is nearly straight or very slightly emarginate and has nearly the same form as in *Heterop. indica*; the second lobe is considerably longer than the

first and obtusely rounded anteriorly. The second antero-lateral lobe of *Heterop. indica* on the contrary is a little narrower than the first. The two posterior teeth are much smaller, triangular, tooth-like and subacute; the third tooth is a little larger than the fourth.

The anterior half of the upper surface of the cephalothorax presents the same transverse, minutely granulated, pubescent lines as that of *Heterop. indica.* Immediately below the first antero-lateral lobe, the subhepatic region presents some more or less prominent granules; Kinahan describes them in the adult as »a small spine", Haswell as a »tubercular eminence." The flagellum of the outer antennae is longer than that of *Heterop. indica* and but little shorter than half the breadth of the cephalothorax. The abdomen does not fully agree with Kinahan's figure, the joints appear comparatively a little broader; the penultimate joint is distinctly broader than long, that of *Heterop. indica* nearly quadrate.

The left chelipede is the larger one. The upper margin of the arm has an acute tooth immediately before the distal end. The wrist presents an acute tooth at its internal angle and the upper surface is somewhat granular. The larger hand (fig. 2) is a little more than once and a half as long as high, and the horizontal length of the fingers is but little more than half the horizontal length of the palm. The hand is minutely granulate on its upper margin and close to the articulation with the wrist, though in our young specimen the granules are only visible by means of the magnifying glass. The outer surface of the hand appears smooth for the naked eye, and very minutely granular under a strong lens. The dactylus is short, curved and somewhat granular at the base; this finger is not grooved, but presents two or three rows of impressed points. The immobile finger is distinctly sulcate on its outer surface, and armed with two or three teeth; the dactylus presents also three teeth, of which the two proximal ones are smaller than the opposite teeth of the index. The lower margin of

the palm is in a straight line with the lower margin of the immobile finger.

The fingers of the smaller hand are comparatively a little longer and the impressed points on the dactylus are deeper, the upper forming partly a groove; the upper and the posterior margin of the palm and the lower part of the outer surface are granular, and still much smaller granules are observed, by means of a strong magnifying-glass, on the rest of the outer surface. The fingers have pointed tips.

The hairy ambulatory legs are rather much compressed and resemble those of *Heterop. indica*, but the dactylopodites are still somewhat longer and are distinctly longer than the propodites.

Heteropanope australiensis Stimpson has five antero-lateral teeth and cannot therefore be identical with our species, as Haswell thought.

It is impossible to decide whether *Pilumnopeus crassimanus* A. Milne Edw. from Port Western is identical with Kinahan's species, because the description is too short.

The upper surface of the cephalothorax is of a dark brown olive-green colour, the antero-lateral margins, the orbital margins and the frontal lobes are yellowish red, and the upper surface seems to be marked with a few reddish spots, as e. g. at the two fissures of the upper orbital margin. The upper sides of the anterior legs and the ambulatory legs have nearly the same colour; the outer surface of the hands is of a pale reddish, and the fingers are dark brown, the brown colour gradually growing paler towards the tips.

	♂	
Greatest width of the cephalothorax	$15^2/_3$	mm.
Length of the cephalothorax, without the frontal lobes	$11^2/_3$	»
Length of the cephalothorax, with the frontal lobes	12	»
Distance between the internal orbital angles	6	»
Length of the larger hand, fingers included	$11^1/_2$	»

Length of the palm . . . . . $7^1/_2$ mm.
Height of the palm near the articulation with the fingers . . . . . 7 »

In adult specimens the cephalothorax has a breadth of $1^1/_4$ inch and is then twice as large as our individual.

Heteropanope serratifrons Kinahan inhabits the eastern coast of Australia and New Zealand.

10. *Pilumnus globosus* Dana.
(Pl. 3, fig. 3).

Pilumnus globosus, Dana, l. c. p. 236, Pl. XIII, fig. 10.

Two specimens (♂ and ♀) of which the locality is unknown.

The cephalothorax of this species is rather thick, and, being but little broader than long, greatly resembles the species of the genus *Actumnus*. The upper surface is very convex in the antero-posterior direction; the regions are very faintly indicated and the sutures defining the gastric region are scarcely visible. The upper surface is covered with a few scattered, small granules and densely with rather short yellowish hairs. The front is very narrow, the distance between the internal angles of the orbits measures scarcely a third of the greatest width of the cephalothorax. It is much deflexed, prominent and divided in two lobes by a narrow but deep incision. The finely granulated and straight margins of these two frontal lobes run obliquely backward and are not separated by an incision from the upper orbital margins, quite as in the genus *Sphaerozius* Stimps. The external orbital angle is formed by a small rather acute granule, the inferior orbital margin presents some similar granules and the internal angle of the latter terminates in a somewhat larger granule. The basal joint of the outer antennae is very short and even the second joint does not yet reach the frontal margin; the length of the flagellum is still a little shorter than the breadth of the front. The antero-lateral margins are a little longer than the postero-lateral ones; they are entire, and orna-

mented, behind the external orbital angles, anteriorly with three small granules, placed at some distance from one another. The postero-lateral margins are slightly concave. The pterygostomian regions are smooth: a few granules are only observed quite near the inferior orbital margins. The endostome is distinctly ridged. Sternum and abdomen are punctate, but for the rest smooth; the penultimate joint of the abdomen in the male is somewhat broader than long.

The anterior legs are unequal both in the male and in the female. The larger hand (fig. 3) is very thick and its outer surface very convex; the latter is covered everywhere, as well on the upper as on the lower margin, with numerous granules, which are not arranged in transverse series, but irregularly. These granules are rather sharp close to the articulation with the wrist, but they become gradually more numerous, smaller and more obtuse towards the fingers. The fingers are short, smooth and not grooved; a few very small granules are only seen quite at the base of the dactylus, when observed under a magnifying-glass, and these granules are placed in a transverse row.

The granules, with which the smaller hand is covered, are less numerous, larger, conical, acute and more or less arranged in transverse rows. The dactylus is somewhat hairy at the base and presents here two or three longitudinal rows of acute granules; similar granules are also found at the outer surface of the immobile finger, which is slightly grooved. The larger hand is only slightly hairy on the proximal half of its outer surface, but the outer surface of the smaller hand is hairy until the base of the fingers. The fingers are black, with white pointed tips; each of them is armed with two or three white teeth.

The dimensions of the female are follows:

Greatest width of the cephalothorax	16	mm.
Length of the cephalothorax	$13^1/_3$	„
Distance between the internal orbital angles .	$4^2/_3$	„
„ „ „ external „ „ .	$10^1/_4$	„

This species is most closely allied to *Pilumnus actumnoides* A. Milne Edw., which inhabits New Caledonia, but in this form the frontorbital margin of the upper surface of the carapace is comparatively broader, according to the figure published by Milne Edwards, the small teeth of the antero-lateral margins are more numerous and more prominent, and the outer surface of the larger hand is covered with less numerous granules. The dactylus of *Pilumnus actumnoides* seems to be also a little more granulate above.

Pilumnus globosus was discovered by Dana at the island of Tahiti and at some other islands of the Pacific Ocean, and was observed by the Challenger Expedition in the Japanese Seas.

11. *Pilumnus tahitensis*, n. sp.

(Pl. 3, fig. 4).

Two specimens (♂ and ♀) from Tahiti.

This very interesting new species may at first sight be distinguished from its numerous congeners by the fingers of the chelipedes which have exactly the same structure as those of *Pilumnus cristimanus* A. Milne Edw., and by the antero-lateral margins of the carapace being armed with the typical number of acute spines, just as in the typical forms of the genus.

The cephalothorax is a little broader than long. Its upper surface is rather depressed, only declivous towards the front and slightly so towards the antero-lateral margins. The regions are not or very faintly indicated; the upper surface appears smooth and shining between the scattered tufts of hair, but slightly uneven, though scarcely distinguishable, at the insertion of every tuft of hairs. The hairs, with which the upper surface is covered, are partly long, silken and pale yellowish, partly pinnate. They arise in transverse rows on the front at some distance from the margin. The front is rather prominent, less broad than half the breadth of the cephalothorax,

and divided by a triangular notch in two lobes which are directed somewhat obliquely backward. The margins of the frontal lobes are nearly straight, scarcely a little sinuous, and are not separated by any incision from the obtuse internal orbital angles. The frontal margins are smooth and not granular, quite as the upper surface of the cephalothorax. The orbits are large and slightly broader than half the width of the front. The eye-peduncles are hairy.

The upper margin of the orbits is not granulate, but hairy; the external angle is formed by a triangular, acute and rather prominent tooth, close to which the upper margin presents still a much smaller, triangular lobe. The acute tooth at the extraorbital angle is separated by a deep, triangular hiatus from the lower margin of the orbits; this hiatus is a little broader in the female than in the male.

The external half of the inferior margin of the orbits is entire, the internal angle dentiform, acute, hairy and rather prominent (fig. 4*a*) and two or three much smaller teeth are observed between the internal tooth and the external half of the lower margin. The interior hiatus of the orbits is rather wide and spacious; the basal joint of the antennal peduncle is considerably shorter than the internal suborbital tooth and does by far not reach the front. The second joint reaches to the upper surface of the front and the third joint is almost as long as the second. The flagellum is glabrous and as long as the breadth of the front.

The antero-lateral margins are distinctly shorter than the postero-lateral. They are armed with three very acute spiniform teeth, which are equally distant from one another as from the dentiform external orbital angle. The subhepatic region bears several small and acute tubercles, one of which is larger than the others and dentiform (fig. 4*a*). The pterygostomian regions are somewhat granular. The endostome is distinctly ridged. The merus-joint of the outer foot-jaws is quadrangular, its anterior margin straight or scarcely concave and the external angle obtusely rounded.

The penultimate joint of the male abdomen is somewhat broader than long. The sternum and abdomen are slightly pubescent.

With the exception of the fingers and of the inner surface of the hands, the anterior legs are covered with hairs which are partly long, silken and yellowish, partly pinnate and which resemble those, found on the upper surface of the cephalothorax. In the male the right chelipede is a little larger than the left; unfortunately the female specimen has lost the right leg, so that I cannot say whether they are equal or not. The upper margin of the arms bears two sharp spiniform teeth, one at the distal end, the second a little before it; a small spiniform tooth is also observed at the proximal end of the anterior margin. A sharp conical granule is found at the internal angle of the wrist and a few similar conical and acute granules are dispersed on the upper surface which is covered with long hairs.

The fingers of the larger hand (fig. 4*b*) are about as long as the palm, those of the smaller hand distinctly longer. The palm is covered above and externally with rather long hairs and between these hairs with a few sharp conical granules, which resemble those of the upper surface of the wrist; these granules decrease in size towards the inferior margin.

The fingers present exactly the same form and structure as those of *Pilumnus cristimanus*; the crests on the outer surface of the fingers are however less acute and more obtuse, and the sharp inner edge of the immobile finger, which is quite entire in *Pilumnus cristimanus*, presents, at least in the male, four or five very small incisions. The fingers are smooth all over, and present no trace of granulation, even at the base of the dactylus, but at the uncoloured base of the latter a few long hairs are implanted.

The ambulatory legs, which are covered with long hairs, are comparatively long and their propodites are nearly as

long as the dactylopodites; the upper margins of the mero- and of the carpopodites are armed with a spiniform tooth at the distal end. The hairs which are found on these legs are also partly pinnate.

Pilumnus tahitensis is closely allied to *Pilumnus vestitus* Haswell from Port Jackson (vide Miers, Challenger Expedition, Brachyura, p. 159, Pl. XIV, fig. 3), but is distinguished at first sight by the remarkable structure of the fingers.

Dimensions:	♂	♀
Breadth of the cephalothorax, lateral teeth included	$10^2/_3$ mm.	10 mm.
Length of the cephalothorax	$7^2/_3$ »	$7^1/_2$ »
Distance between the external orbital angles	$7^1/_2$ »	$7^2/_5$ »

12. *Trapezia guttata* Rüpp. (Heller).

Trapezia guttata Rüppel, Heller, in: Sitzungsber. Kais. Acad. der Wissensch. in Wien, Bd. XLIII, p. 351.

Trapezia guttata, Miers, Report on the Challenger Brachyura, 1886, p. 166, Pl. XII, fig. 1.

Two specimens, male and female, from Samoa.

Quite as in the specimens described (l. c.) by Miers, also in our specimens the ambulatory legs alone are marked with small red spots. The cephalothorax is a little broader in proportion to the length than that of *Trapezia cymodoce* Herbst.

Our species is also distinguished by the frontal teeth being but little developed and by the glabrous outer surface of the hands.

The lateral teeth of the cephalothorax are sharp and acute as in *Trap. cymodoce*; the hands are much compressed and their upper margin is rather sharp, not rounded.

Dimensions:	♂	♀
Breadth of the cephalothorax, distance between the lateral teeth	$12^3/_4$ mm.	$12^2/_3$ mm.
Length of the cephalothorax	$10^1/_4$ »	$9^3/_4$ »

13. *Trapezia flavopunctata* Eyd. & Soul.

Trapezia flavopunctata, Eydoux & Souleyet, Voyage de la Bonite, Tome I, p. 230, Pl. 2, fig. 3.

Trapezia latifrons, A. Milne Edwards, Nouvelles Archives du Muséum, Tome IX, p. 259, Pl. X, fig. 7.

Three adult specimens (2 ♂ and 1 ♀) from Tahiti and two very young males the locality of which is unknown.

The two young males certainly belong to *Trap. latifrons* A. Milne Edw. and agree completely with the description and the figure of that species. They differ from the three adult individuals almost only by having the areolae of the reticulate pattern on the cephalothorax larger and less numerous. This species may be distinguished at first sight from *Trap. areolata* Dana: 1° by the general shape of the cephalothorax, 2° by the granulate lower margin of the hands, and 3° by the areolae. In *Trap. areolata* Dana the areolae are much smaller and much more numerous and do not exist on the ambulatory legs. The lateral teeth of the cephalothorax are less sharp in the adult than in the young, and this is also the case with the acute tooth at the internal angle of the wrist of the anterior legs. In adult specimens the upper-, as well as the lower surface of the cephalothorax is marked with a net of areolae, which are a little larger than those of *Trap. areolata*; these areolae are also seen on both sides of the anterior legs. Spot-like red transverse bands exist on the ambulatory legs, two or three on the meropodites, and one on the carpo- and propodites.

I finally may observe that this species differs from *Trap. rufopunctata* Herbst exclusively by the pattern, showing in any other respect the most complete resemblance with it.

The largest specimen, a female, has the following dimensions:

Distance between the external orbital angles $20^1/_4$ mm.

Length of the cephalothorax . . . . . 17 mm.
Breadth of the front, measured between the eyes 13 »

In the smallest specimen, a male, the measurements are as follows:
Distance between the external orbital angles . . 11 mm.
Length of the cephalothorax . . . . . $8^1/_4$ »
Breadth of the front, measured between the eyes $6^4/_5$ »

14. *Eriphia scabricula* Dana.

Eriphia scabricula, Dana, l. c. Tome I, p. 247, pl. XIV, fig. 5.

A female and a younger male from unknown locality.

I have before me a young male of *Eriphia laevimana*, var. *Smithii*, collected in the Javan Sea, which I have described some time ago (Archiv f. Naturgeschichte, Bd. 53, 1888, p. 327), so that I am enabled to point out the slight differences existing between this form and *Eriphia scabricula*. The cephalothorax of Dana's species is slightly more enlarged. The post-frontal lobes 2 F are not separated in this species from the regions 1 M by a transverse groove, but form one single region with the latter and the regions 2 M; in *Eriphia laevimana* the post-frontal lobes 2 F are on the contrary separated from the areolae 1 M by distinct smooth transverse grooves. These areolae 2 F and 1 M are more finely granulated in *scabricula* than in the other form. The median incision of the front is slightly wider, and the anterior margins of the two arcuate frontal lobes are not or only very finely granulated, but very distinctly so in *Eriphia laevimana*. The granulation on the outer surface of the hands is somewhat closer and finer in *Eriphia scabricula*, and the upper surface of the cephalothorax and the hands are always hairy in the species described by Dana.

The largest specimen, the female, has the following dimensions:

Breadth of the cephalothorax 19 mm.
Length » » » $12^3/_4$ »
Breadth of the front . . . $9^3/_4$ »

These measurements are in the male of *Eriphia laevimana*, var. *Smithii*, respectively 18 mm., $12^3/_4$ mm. and 9 mm.

15. *Goniocaphyra truncatifrons* de Man.

Goniocaphyra truncatifrons, de Man, in: Archiv f. Naturgeschichte, 1888, Bd. 53, p. 339, Pl. XIV, fig. 1.

This species is identical with *Catoptrus nitidus* A. Milne Edw.

At the time when I described the *Goniocaphyra*, I supposed *Catoptrus nitidus* to be a quite different form, especially because I was led to the opinion that the *Goniocaphyra* ought to be referred to the Portunidae on account of its presumptive affinities with the genus *Caphyra* Guérin.

Prof. Milne Edwards kindly sent me his own drawing of *Catoptrus nitidus*, which has never been published as far as I am aware. The cephalothorax attains in the adult specimens a breadth of 23 mm., the original specimen of *Goniocaphyra* has not yet half that size. In the adult male the hands, especially the larger one, seem to present a somewhat different form as in the younger male and in the female. This observation is the result of a comparison of the drawing of Milne Edwards with my own figures and a female specimen from the Pacific Ocean, which I have before me. The cephalothorax of this latter specimen is 12 mm. broad. According to the drawing of Prof. Milne Edwards, the fingers of the larger hand of the adult male are little more than half as long as the palm, whereas they are exactly as long as the palm in the young male specimen I have described. The fingers should be, moreover, comparatively higher and less slender in the adult male than in the young and in the female.

Catoptrus nitidus A. Milne Edw. has been recorded from the Javan Sea and from the Samoa Islands.

16. *Xenophthalmodes Moebii* Richters.

(Pl. 3, fig. 5).

Xenophthalmodes Moebii, Richters, Beiträge zur Meeresfauna der Insel Mauritius und der Seychellen, 1880, p. 155, Pl. XVI, fig. 28, Pl. XVII, fig. 1—5.

A single male from the Red Sea, collected by Mr. J. A. Kruyt at Djeddah.

On this interesting form the following may be remarked.

According to Mr. Richters the corneae of the eyes should be entirely obliterated in this species, which therefore should be perfectly blind. In the Djeddah specimen, however, I observe an extremely small, punctiform, dark-coloured cornea (fig. 5), placed near the external extremity of the lower margin of the orbits; this minute cornea may best be seen when light falls in an oblique direction upon it and then it appears, under a magnifying-glass, as a black point. Richters does not say much about the external foot-jaws, but in his figure 5 the anterior and the external margins of the merus-joint seem to make together a continuous arcuate line. In our specimen, however, the merus-joint (fig. 5*a*) is distinctly quadrangular, the anterior margin nearly straight or very slightly arcuate, a little oblique and somewhat longer than the external margin; there is a distinct angle between the two margins, and the palp is inserted at the antero-internal angle of the joint.

A third difference finally presents the abdomen (fig. 5*b*), the third, fourth, fifth and sixth joints of which are somewhat shorter and appear therefore more enlarged than in the figure given by Richters; the terminal joint is a little longer than it is broad at the base.

For the rest our specimen agrees perfectly well with all what Richters says and figures, and I therefore suppose our specimen to belong to the same species.

The whole animal is of a pale grayish colour and the upper margin of the mobile finger of a porcelain-white.

The cephalothorax is, posteriorly, 11 mm. broad and $8^1/_5$ mm. long. The specimen of Richters had about the same size.

17. *Geryon trispinosus* Herbst.

(Pl. 4, fig. 6).

Cancer trispinosus, Herbst, Krabben und Krebse, Bd. III, Heft 3, p. 43, Pl. LVII, fig. 4 (1803).

Chalaepus trispinosus, Gerstaecker, Carcinologische Beiträge, in: Archiv f. Naturgeschichte, Jahrg. XXII, 1856, p. 119.

The Leyden Museum Collection contains one single male specimen of this rare and interesting crab, of which, as far as I know, only one other specimen exists, viz. the original specimen of Herbst's *Cancer trispinosus* in the Royal Museum of Berlin. Unfortunately the origin of the Leyden Museum crab is quite unknown. Herbst indicates the East-Indies as the habitat of his *Cancer trispinosus*. The other species of the genus *Geryon* occur in the European seas and in the Atlantic Ocean: all are deep-sea forms. It appears, for that reason, very probable to me that *Geryon trispinosus* Herbst represents this genus in the depths of the indo-pacific seas, and that therefore only two specimens have been collected until to day.

Gerstaecker created for this species the genus *Chalaepus*, but it is without any doubt a true representative of the genus *Geryon*, established by Kröyer in 1837. Three species of this genus were known up to this date, if we exclude *Geryon incertus* Miers from the Bermudas, the true place of which is still uncertain: they are *Geryon tridens* Kröyer from the northern European seas, *Geryon quinquedens* Smith from the East Coast of the United States, and *Geryon longipes* A. Milne Edw. from the Mediterranean and North Spanish coasts.

I have to express my thanks to Dr. Hilgendorf of Berlin, from whom I have received most valuable informations regarding the specimen of Herbst. The latter presents some slight differences, which are either individual or must be

attributed to the somewhat larger size of the crab of the Berlin Museum.

The cephalothorax (fig. 6) is hexagonal, moderately convex in the antero-posterior, and slightly so in the transverse direction. Only a part of the regions are indicated. The posterior half of the mesogastric and the anterior half of the cardiac region are defined laterally by shallow grooves, but there is no transverse groove between these two regions. The cardiac region is separated posteriorly from the branchial regions by somewhat erose and uneven shallow impressions, which separate it also from the intestinal region. On each side of the mesogastric region a short impressed line is seen anteriorly, with a punctiform impression at the internal extremity of each line. A shallow depression, bearing two verrucous eminences, separates the hepatic from the branchial regions and the latter are somewhat erose and uneven in the middle. The anterior declivous part of the upper surface presents no interregional grooves at all. The upper surface is smooth and glabrous, though it is rather irregularly punctate and marked with numerous shallow and small impressions, which give it here and there an erose appearance.

The cephalothorax is a little broader than long, and the proportion of the distance between the third antero-lateral teeth and the length is about as 4 : 3. The front is obliquely directed downward and measures about a fifth of the distance between the posterior antero-lateral teeth. Its rather sharp anterior margin terminates in four small obtuse teeth, the external of which forms the internal angles of the orbits; the median teeth are placed close together and project a little more forward than the external ones. These frontal teeth are a little more prominent in the specimen of Herbst than in that of Leyden. The front is flattened and smooth, and presents no trace of a frontal furrow. The breadth of the front between the tips of the external teeth is a little larger than the width of the orbits between their inner and outer angles.

The upper orbital margin presents traces of two fissures, but appears for the rest entire. The outer angles of the orbits are dentiform and acute, and project a little less forward than the external frontal teeth.

The antero-lateral margins (fig. 6*b*) are shorter than the postero-lateral ones and measure only two thirds of the latter. They are armed behind the dentiform, external orbital angles, with two acute teeth, of which the posterior one is somewhat larger than the other. This third or last tooth is comparatively a little longer and larger in the specimen of Herbst than in our somewhat younger individual. The first antero-lateral, i. e. the extraorbital tooth, is somewhat flattened above, the two posterior ones slightly convex. The distance between the tips of the first and the second antero-lateral teeth is but little smaller than the distance between the second and the third. The lateral margin of the cephalothorax appears very slightly convex between the first and the second as well as between the second and the third antero-lateral teeth. In the original specimen of Herbst the lateral margin is quite straight between the first and the second teeth, slightly convex between the second and third; in this specimen the anterior margin of the third tooth forms almost a right angle with the lateral margin, in our specimen, however, a concave arcuate line. The postero-lateral margin is obtusely carinate anteriorly, but this obtuse carina disappears backward and the posterior margin of the cephalothorax is almost as broad as the distance between the second antero-lateral teeth. The lower margin of the orbits (fig. 6*a*) is concave and entire, and terminates in an acute prominent tooth, which projects about as much forward as the external frontal teeth. The eyes, antennulae, antennae and epistome are very much like in *Geryon tridens*. The second joint of the antennal peduncle is a little shorter than the basal joint and reaches almost to the upper surface of the front; the third joint measures about two thirds of the length of the

second. The endostome is distinctly ridged. The merus-joint of the outer foot-jaws (fig. 6*c*) is as long as it is broad at base; its anterior margin as well as the antero-external angle is rounded and the external margin very slightly concave. The penultimate joint of the palp is only a little shorter than the terminal joint, and the exognath reaches almost to the rounded antero-external angle of the merus-joint.

The pterygostomian regions, the sternum and the abdomen are smooth and glabrous. The sternum is almost as long as broad and the two anterior segments are coalescent. The abdomen of the male (fig. 6*d*) resembles that of *Geryon longipes* A. Milne Edw. as regards its outer form; it is seven-jointed, all the sutures being distinct, but the third, fourth and fifth segments seem to be coalescent and immobile. The two first segments cover the whole width of the sternum between the bases of the fifth ambulatory legs; they are less broad than the third segment, which is the broadest of all. The fourth, fifth and sixth segments are subequal in length, the lateral margins of the penultimate segment slightly convex. The form of the terminal segment differs a little in our specimen and in that of the Berlin Museum. In our specimen it is broadly triangular, the length measuring only two thirds of the breadth at base; the lateral margins are very slightly concave and the posterior margin occupies exactly the anterior margin of the penultimate segment. In the specimen of Berlin the terminal segment is comparatively less enlarged and more narrowed anteriorly, the lateral margins being more distinctly concave; the length measures four fifths of the breadth at base, and the posterior margin is a little shorter than the anterior margin of the penultimate segment.

The anterior legs are moderately robust and the right leg is a little larger than the left, as in the specimen of Herbst. The upper margin of the arms bears a very small spiniform tooth at some distance before the distal end;

the other margins are obtuse, rounded and unarmed. The upper surface of the wrist is somewhat uneven and presents a very acute spiniform tooth at the internal angle.

The larger hand is two and a half times as long as high and the fingers are a little shorter than the palm, which is about a third longer than high. The outer surface of the palm is slightly concave above in a longitudinal direction, rather convex in the middle and at the rounded under margin; the upper margin is rounded. The fingers are slightly compressed and have pointed crossed tips, the upper margin of the dactylus is arcuate, rounded and smooth; the inner margin is armed with ten or twelve teeth, of which the proximal one is somewhat larger than the others. The inner margin of the immobile finger presents nearly the same number of teeth, which also decrease in size towards the tip of the finger.

The smaller hand resembles the larger, but the fingers are slightly longer than the palm. The anterior legs are smooth and glabrous.

The ambulatory legs are slender and elongate. The legs of the third and fourth pair are equal in length and longer than those of the two other pairs; the second pair is the shortest of all. Gerstaecker's description is inexact, when he says that the meropodites of the fourth and fifth legs have almost the same length and that the meropodite of the third pair is the longest of all. The mero-, carpo- and propodites are strongly compressed laterally; the slightly arcuate upper margin of the meropodites ends at the distal end in a small sharp tooth. The carpopodites and the propodites of the four pairs of ambulatory legs present, with regard to their length, the same proportions as the meropodites. The very slightly arcuate dactylopodites are compressed laterally and also in the antero-posterior direction, and their upper or outer margin is slightly concave longitudinally. The ambulatory legs are apparently smooth and glabrous.

Our specimen, like that of Berlin, is of a pale bone-

colour; the figure of Herbst is too dark, as is already observed by Gerstaecker.

I give here the dimensions of the two specimens:

	Leyden.	Berlin.
Distance between the tips of the third antero-lateral teeth (= breadth of the cephalothorax)	90 mm.	99 mm.
Distance between the tips of the first antero-lateral teeth (extraorbital teeth)	50½ »	51½ »
Distance between the tips of the first and of the second antero-lateral teeth . .	15 »	15 »
Distance between the tips of the second and of the third antero-lateral teeth .	17 »	
Distance between the tips of the first and of the third antero-lateral teeth (= length of the antero-lateral margin)	31 »	
Length of the postero-lateral margin .	44 »	
Length of the posterior margin of the cephalothorax	64 »	
Length of the cephalothorax, without the median frontal teeth	70 »	76½ »
Distance between the tips of the inner sub-orbital tooth and the extraorbital tooth	12 »	11 »
Distance between the tips of the external frontal teeth (breadth of the front) .	18 »	18½ »
Length of the sternum	52 »	
Breadth of the sternum	48 »	
Length of the terminal segment of the male abdomen	7½ »	8 »
Breadth at base of the terminal segment of the male abdomen	12 »	10 »
Length of the larger hand	69 »	
» » » palm of the larger hand	36½ »	
Height » » » » » » »	27 »	
Length of the meropodites of the first right pair of ambulatory legs . . .	49 »	50 »

	Leyden.	Berlin.
Length of the meropodites of the second right pair of ambulatory legs . . .	60 mm.	58 mm.
Length of the meropodites of the third right pair of ambulatory legs . . .	61 »	58 »
Length of the meropodites of the fourth right pair of ambulatory legs . . .	55 »	$51^1/_2$ »

As I already observed above, the two specimens do not fully agree with one another as regards the dimensions. Firstly in the Leyden specimen the distance between the extraorbital teeth is a little larger in proportion to the length of the cephalothorax and to the distance between the third antero-lateral teeth than in the specimen of Berlin. The ambulatory legs seem to be comparatively a little shorter in the specimen of Herbst than in that of Leyden and the meropodites of the last pair of legs are comparatively a little longer in proportion to those of the other legs in our specimen than in that of Herbst.

Dr. Hilgendorf adds that the meropodites of the left legs of the Berlin specimen are all together one millimetre shorter than those on the right side.

The four species of the genus *Geryon* may be distinguished as follows:

Lateral margins with five teeth. Front exactly as broad as the orbits . . . . . *quinquedens* Smith.

Lateral margins tridentate. Front distinctly broader than the orbits.

- Antero-lateral margins a little shorter than the postero-lateral and concave between the antero-lateral teeth . *tridens* Kröyer.
- Antero-lateral margins slightly convex between the antero-lateral teeth, which are comparatively . . . large: *longipes* A. M. Edw. [1]) / small: *trispinosus* Herbst.

1) Victor Carus (Prodromus Faunae Mediterraneae. Pars II, 1885, p. 522) quotes *Geryon longipes* as identical with *Geryon tridens*.

18. *Macrophthalmus crassipes* H. Milne Edw. (Pl. 4, fig. 7—9).

Macrophthalmus crassipes, H. Milne Edwards, in: Annales Sciences Naturelles, T. XVIII, 1852, p. 157.

One male specimen from the Carolines.

I will remark the following about this rare form, which is only known by the short diagnosis of Milne Edwards. I have before me a type specimen (♂) of *Macr. crassipes* M. Edw., received from the Paris Museum, a type specimen (♂) of *Macr. dilatatus* de Haan from Japan, and several specimens (♂ and ♀) of *Macr. carinimanus* Latr., on which I have published some remarks ten years ago (Notes from the Leyden Museum, Vol. II, 1880, p, 69). In that note I have compared *Macr. carinimanus* Latr. with *Macr. dilatatus* de Haan and I now wish to indicate the differences between these two forms and *Macr. crassipes.*

The cephalothorax of *Macr. crassipes* most closely resembles that of *Macr. dilatatus*, as regards its general form, the granulation of the upper surface, and the number, form and direction of the antero-lateral teeth. I cannot, indeed, find any other difference than that the fissure between the external orbital angle or first antero-lateral tooth and the second tooth is a little narrower in *Macr. crassipes.*

The eye-peduncles of *Macr. crassipes* reach as far as the external orbital angle, but are a little shorter in the species of de Haan and do not reach the extremity of the first antero-lateral tooth. The interregional grooves are equally developed in both species, and the granulation of the upper surface is also quite the same, two granular tubercles being observed on the postero-lateral sides.

Both species fully agree with one another as regards the direction of the upper margin of the orbits, which is somewhat oblique, so that the extremity of the external orbital angle projects much less forward than the upper orbital margin.

In both species the antero-lateral margins are armed with two teeth behind the acute external orbital angle, of which the anterior one is considerably larger than the third.

Macr. crassipes and *Macr. dilatatus* may be distinguished at first sight by the different structure of the hands of the male (and probably also of the hands of the female). The upper margin of the arms presents a few small sharp teeth in the middle, in both species, and in both forms the inner surface of the wrist is bispinose, bearing namely one acute tooth at the inner angle of the upper surface and the other at the inner angle of the under surface. The hands much resemble one another as regards their general form (fig. 7 and 9). The fingers are shorter than the palm and deflexed in both forms. The outer surface of the palm (fig. 7) appears nearly smooth for the naked eye in *Macr. crassipes*; a fine granulation however is observed covering the whole outer surface, when the latter is examined under a magnifying-glass, and these granules increase somewhat in size towards the articulation with the wrist. The upper margin of the palm is finely granulated. [1]) In *Macr. dilatatus* on the contrary the upper half of the outer-surface of the palm (fig. 9) is strongly, though rather thinly, granulated, the granules are visible to the naked eye and they are separated by a transverse ridge of larger granules from the smooth and concave middle part of the outer surface; that concave part is bordered below by a granulated longitudinal ridge, which proceeds upon the immobile finger, and exists also in *Macr. crassipes*. The upper margin of the palm bears several prominent and sharp conical teeth in the species of de Haan. The

1) In our specimen from the Carolines (fig. 7*a*) the fingers are a little more deflexed and leave, when closed, a somewhat wider hiatus between them than in the Paris type specimen (fig. 7). This slight difference may perhaps be explained by the larger size of the Paris specimen.

upper margin of the mobile finger of *Macr. dilatatus* is straight and distinctly granulated; the inner margin has numerous very small teeth, but no large prominent one. The inner margin of the index presents also numerous very small teeth and no large one. In *Macr. crassipes* the dactylus is rather strongly arcuate and smooth, even at the upper margin; the inner margin presents some small teeth, of which one quite at the base is a little larger. The immobile finger is armed with a prominent tooth in the middle of its inner margin, the tip of which tooth descends obliquely to the proximal end of the finger and perpendicularly to the distal end. The inner surface of the palm is armed in both species with a spine and densely covered with hairs, like the inner surface of the fingers.

Macr. crassipes M. Edw. is also closely allied to *Macr. carinimanus* Latr. The cephalothorax of the latter differs from the cephalothorax of *Macr. crassipes* especially by the less oblique direction of the upper orbital margins, so that the external orbital angle, which is directed obliquely outward, projects as much forward as the upper orbital margin, which is not the case in *Macr. crassipes*. The incision which separates the external orbital angle or first antero-lateral tooth from the second, is much narrower in *Macr. crassipes* than in the other. Both species resemble one another as regards the granulation and the structure of the upper surface, and two granulated eminences are observed on the postero-lateral sides in both forms.

The hands of *Macr. carinimanus* (fig. 8) are however longer and more slender than those of *Macr. crassipes*, the palm being nearly four times as long as high in the former, but only about twice as long as high in the latter species. The proportion between the length of the palm and of the fingers is about the same in both forms. The outer surface of the palm is finely granular above and towards the articulation with the wrist, and presents below, near the lower margin, a strong

granulated crest, proceeding upon the immobile finger. The inner surface of the palm is armed with a spine in both species and hairy like the inner surface of the fingers. The latter are almost as strongly deflexed in *Macr. carinimanus* as in *Macr. crassipes* and agree much in both species; the basal tooth of the dactylus however is comparatively a little broader, and the tooth of the index comparatively a little smaller than in *Macr. crassipes*. The fingers of *Macr. crassipes* are also a little more slender and the dactylus is slightly more arcuate.

The dimensions of our specimen of *Macr. crassipes* are:

Distance between the external orbital angles	$22^1/_2$ mm.
Length of the cephalothorax	$10^1/_4$ »

The cephalothorax of the Paris specimen of *Macr. crassipes* is almost 15 mm. long.

The dimensions of two males of the two other species are as follows:

	Macr. carinimanus.	*Macr. dilatatus.*
Distance between the external orbital angles.	$21^1/_2$ mm.	$26^1/_2$ mm.
Length of the cephalothorax . . .	$9^1/_2$ »	$12^3/_4$ »

Macr. crassipes H. Milne Edw. has hitherto only been recorded from the coast of New Holland.

19. *Macrophthalmus pacificus* Dana.

(Pl. 4, fig. 10).

Macrophthalmus pacificus, Dana, l. c. p. 314, Pl. XIX, fig. 4.
Macrophthalmus bicarinatus, Heller, Novara-Reise, p. 36, Pl. IV, fig. 2.

The Leyden collection contains four specimens of which the locality is unfortunately unknown, one male and three females, none of which is provided with eggs. The latter fact is remarkable, because the original specimens, described by Dana and Heller, were of a still smaller size.

The proportion of the greatest width of the cephalothorax to its length is in our specimens as 7 : 5. The upper surface is slightly convex longitudinally as well as transversely; the gastric region is defined posteriorly by the distinct cervical suture, but laterally by shallow depressions of the upper surface. Similar depressions border the anterior branchial area posteriorly and also for a part the cardiac region. The upper surface appears smooth and shining to the naked eye; when seen under a magnifying-glass of sufficient power, it appears however to be very minutely granular, especially on the branchial regions. The postero-lateral sides of the upper surface are marked with two minutely granulated, pubescent, longitudinal lines, which run parallel with each other, not far from the postero-lateral margins; a third, minutely granulated and pubescent, though much shorter line runs, on each side of the upper surface, in an oblique direction, close to and nearly parallel with the posterior margin of the cephalothorax, immediately above the insertion of the last pair of legs; finally, a fourth, somewhat arcuate line is seen immediately in front of the two described longitudinal lines, proceeding, for a short distance, transversely from the third tooth of the lateral margins. The front is obliquely deflexed and shows a longitudinal groove in the middle; it is rather narrow and its breadth measures not quite one sixth of the distance between the external orbital angles. The anterior margin of the front is very slightly arcuate. The lateral margins of the cephalothorax are sinuous, their anterior half being slightly convex, their posterior portion appearing slightly concave immediately behind the third lateral tooth. The anterior half of the lateral margins presents two incisions, the first of which is much larger and deeper than the second. The first antero-lateral lobe has an obtuse or sometimes even rounded external angle, which is the external one of the orbits, towards which the upper margin of the latter slightly rises upward. The second lobe of the lateral margins is almost twice as long as the

first, and projects more laterally, because, as I have said, the anterior half of the lateral margins runs slightly outward instead of inward. The third antero-lateral tooth is very small, acute and dentiform. The eye-peduncles measure about a third of the greatest width of the cephalothorax and scarcely reach to the external orbital angle. The inferior margin of the orbits is delicately crenulate both in the male and in the female.

The anterior legs of the male are of equal size. The upper margin and the external margin of the triquetrous arms are finely denticulate and the external surface is minutely granular. The under surface of the arms is thickly clothed with a patch of hair. The wrist has the upper surface smooth for the naked eye. The hands (fig. 10) are quite as long as the length of the cephalothorax and appear to be smooth, but their outer surface proves to be very minutely granular, when seen under a magnifying-glass of strong power. The upper margin as well as the under margin of the palm are obtuse, no longitudinal crest exists on the outer surface close to the under margin and the inner surface, which is unarmed, is thickly clothed with hair on its distal half and at the base of the fingers. The fingers measure almost two thirds of the length of the palm. The lower margin of the immobile finger forms a continuous straight line with the lower margin of the palm, the index being not at all deflexed. The outer surface of the immobile finger is flattened at the base and presents a minutely granulated, longitudinal line which proceeds near the lower margin to the end of the finger; the inner margin is armed with a row of fifteen or sixteen small teeth, of which three or four, which lie in the middle of the row, are a little larger than the others. The mobile finger appears also minutely granular, especially on the upper margin, under a magnifying-glass; the inner margin is, immediately before the middle, armed with a rather broad, prominent tooth, the inner margin of which presents six or seven denticles and just before

the horny, spoonlike excavated tip the inner margin of this finger is armed moreover with five or six very small teeth, which are smaller than the opposite teeth of the index. The excavated tips of the fingers have horny margins and are somewhat hairy.

The upper margin and the infero-internal margin of the arms of the anterior legs of the female are clothed with rather long hairs, but their under surface is quite glabrous, smooth, without a patch of hair. The inner margin of the wrist is also hairy. The hands measure scarcely two thirds of the length of the carapace, they are much smaller than those of the male and have a different form. The fingers are namely quite as long as the palm, the outer surface of which is minutely granular. The upper margin of the palm presents a longitudinal row of small granules; a granulated ridge proceeds on the outer surface of the palm close to and parallel with the under margin and is continued as a smooth ridge on the immobile finger to the tip. Immediately below this ridge the lower margin of the index is longitudinally sulcate. The upper margin of the dactylus is also longitudinally grooved. The outer surface of the fingers appears smooth, the dactylus has no denticulated lobe before the middle, but both fingers are armed with a few very small teeth, which are slightly more distinct on the lower than on the upper finger. The inner margins of the fingers are hairy along their distal half. The smooth inner surface of the palm does not present the patch of hair, which exists in the male.

The meropodites of the other legs are pubescent along their upper margin and armed with a spiniform tooth a little before the distal end; for the rest these legs have the form and structure, proper to allied species.

The two largest individuals have the following dimensions:

	♂	♀
Distance between the external orbital angles.	$13^1/_3$ mm.	$15^2/_3$ mm.

Greatest width of the cephalothorax, immediately before the second incision	15 mm.	$17^1/_2$ mm.
Length of the cephalothorax . . .	$10^3/_4$ »	$12^1/_2$ »

Macrophthalmus bicarinatus Heller from the Nicobar Islands is, in my opinion, identical with *Macr. pacificus* Dana, the only difference being the presence of the two granulated lines on the postero-lateral sides of the upper surface of the cephalothorax, which are not described by Dana. We must, however, consider that Dana's specimen was very small and that a slight pubescence is distinctly seen on his figure 4 *a*, so that I suppose that the pubescent lines were indeed also present in the original specimen of the american author. Heller's figure of *Macr. bicarinatus* is bad, the cephalothorax being figured too narrow. Our species is most closely allied to *Macr. tomentosus* Eyd. & Soul. and I at first thought our specimens to be young individuals of that species of which an adult male from the Mergui Archipelago lies before me. The species of Eydoux and Souleyet presents indeed almost the same form of the cephalothorax, but nearly the whole upper surface is distinctly granulated, the immobile finger of the hands of the male is slightly deflexed and the inner margin of this finger is armed with a strong tooth a little before the middle, whereas the tooth of the dactylus is much smaller and placed close to the articulation.

20. *Myctiris longicarpus* Latr.

Myctiris longicarpus, Milne Edwards, in: Annales Sciences naturelles, Tome XVIII, 1852, p. 154.

Myctiris deflexifrons, de Haan, Fauna Japonica, Crustacea, p. 25 (sine descriptione).

Two specimens, locality unknown.

The cephalothorax of the larger specimen has a length of 25 mm., so that this individual may be considered to be adult. The wrist of the anterior legs presents a longitudinal groove on its upper surface, which is situated close to the internal margin. The fingers are about twice as long as the horizontal length of the palm, the dactylus is armed with a triangular obtuse tooth near the articulation with the palm, and the inner margin of the index is granular along its proximal half. The upper and lower margins of the hand are carinate and two other divergent crests, prolonged to the tips of the fingers, are observed on the outer surface of the palm.

21. *Leptograpsus Ansoni* H. Milne Edw.

Leptograpsus Ansoni, H. Milne Edwards, Annales Sciences Naturelles, 3e Série, T. XX, 1853, p. 172.

Mr. Kingsley in his „Synopsis of the Grapsidae" (Proc. Acad. Nat. Sciences of Philadelphia, 1880, p. 197) regards this species as identical with the common indo-pacific *Leptogr. variegatus* Fabr. The author considers moreover *Leptogr. planifrons* Dana and even all the tridentate *Leptograpsi* of Milne Edwards, as synonyms of the same species. Now the Leyden Collection contains two specimens (♂, ♀) from Valparaiso, which differ from a typical male specimen of *Leptogr. variegatus* M. Edw., kindly sent to me by Prof. Milne Edwards, and collected at the Marquesas, firstly by a slightly more quadrate carapace, of which the external orbital angles are a little more distant from one another in proportion to the greatest width of the cephalothorax, so that the latter appears a little broader anteriorly with less arcuate lateral margins; secondly by the somewhat more slender shape of the ambulatory legs, the joints of which are a little less enlarged. I, for that reason, suppose our specimens to

belong to a different species and I think they belong to *Leptogr. Ansoni* H. Milne Edw., which inhabits the island of Juan Fernandez. For the rest our specimens seem to agree fully with *Leptogr. variegatus*. I cannot say whether the hands are less tuberculate or not, because the male individual is a young one and the other a female.

Leptogr. planifrons Dana is also distinct, as I suppose, the cephalothorax appearing on the figure of this species (Dana, Pl. XXI, fig. 3) even still slightly narrower anteriorly than in the type specimen of *variegatus* and the ambulatory legs appear much less slender than in our Valparaiso specimens. This species, however, may prove to be identical with *Leptogr. Gayi* M. Edw., or perhaps with *Leptogr. variegatus*, which is recorded by Miers from Valparaiso. (Miers, Report on the Brachyura of the Challenger Expedition, p. 257).

Dimensions:	N°. 1. ♂	N°. 2. ♀	N°. 3. ♂
Greatest width of the cephalothorax	33 mm.	$44^1/_3$ mm.	$44^1/_3$ mm.
Distance between the external orbital angles . . .	$24^1/_3$ »	$32^1/_4$ »	$30^1/_4$ »
Breadth of the front, immediately before the external postfrontal lobes . . .	$13^1/_2$ »	$17^1/_2$ »	$17^1/_3$ »
Length of the cephalothorax	29 »	$37^1/_3$ »	38 »
Length of the meropodites of the antepenultimate pair	21 »	$26^1/_2$ »	26 »
Breadth of the meropodites of the antepenultimate pair	$9^3/_4$ »	$11^1/_3$ »	$13^1/_4$ »

N°. 1 and N°. 2 are the two specimens of *Leptogr. Ansoni* M. Edw., N°. 3 the Paris specimen of *Leptogr. variegatus* (Fabr.) M. Edw.

Only by the examination of a large number of specimens from the Chilian Seas this question can be resolved.

22. *Pachygrapsus crassipes* Randall.

(Pl. 5, fig. 11).

Pachygrapsus crassipes, Randall, Journal of the Academy of Natural Sciences of Philadelphia. Vol. VIII, 1839, p. 127.

Pachygrapsus crassipes, Kingsley, in: Proceed. Acad. Nat. Sciences of Philadelphia, 1880, p. 199.

? *Leptograpsus gonagrus*, H. Milne Edwards, Annales Sciences Naturelles, T. XX, 1853, p. 173.

Two specimens, a male and an ova-bearing female, collected by Mr. A. Forrer in the Gulf of California.

The cephalothorax of this species is somewhat broader than long, the proportion of the greatest width to the length being as 6 : 5. The distance between the external orbital angles is nearly exactly as long as the length of the cephalothorax. The upper surface is somewhat convex anteriorly as well as transversely. The cervical suture, bordering the gastric region posteriorly, is distinctly developed, and shallow depressions define the cardiac and intestinal regions; a shallow groove proceeds in an oblique direction from the base of the epibranchial teeth to the transverse groove which separates the gastric and cardiac regions, but does not quite reach that groove. In front of this oblique groove another oblique and shallow depression is observed, bordering the gastric region laterally. In the male the front is exactly half as broad as the greatest width of the cephalothorax, in the female a little broader; the front is obliquely inclined and its lateral margins diverge slightly backwards. It is rather prominent, the delicately granulated anterior margin is straight in the middle, but slightly emarginate towards the lateral angles, which appear obtusely dentiform, though projecting not so far forward as the straight middle part of the margin. The four postfrontal lobes are prominent, tuberculiform, the two internal ones a little broader

than the external and separated from one another by a longitudinal furrow with nearly parallel margins, issuing into the mesogastric area; the external lobes are separated from the internal ones by shorter and less deep grooves. The whole upper surface, with the exception of the cardiac and intestinal regions, is marked with a large number of elevated lines, which on the gastric region have a transverse, and on the branchial regions a somewhat oblique direction. Similar lines exist also on the postfrontal lobes, where they are more prominent; the upper surface of the front is marked with a few small transverse granules. For the rest the upper surface of the cephalothorax is smooth and glabrous. The lateral margins are arcuate and convex, and armed anteriorly with two stout and acute teeth, the anterior of which is larger than the posterior and forms the outer orbital angle.

The inferior orbital margin is minutely denticulate along its whole length and presents a narrow hiatus, fissure or emargination at the base of the external orbital tooth.

The inner suborbital lobe is very small and triangular. The basal joint of the outer antennae is strongly produced at its antero-external angle, which is obtuse or rounded and reaches as far as the inner suborbital lobe. The epistome is very short. The merus-joint of the widely gaping outer foot-jaws is as long as broad; the antero-internal angle of it is much produced.

The sides of the under surface of the cephalothorax are marked with oblique elevated lines; the pterygostomian regions present a few minutely granulated, short lines and are slightly pubescent.

The anterior legs of the male specimen are large, stout and equal. The anterior margin of the slightly concave inner surface of the arm is produced, distally truncate and dentate; the inner and the external sides are transversely rugose. This is also the case with the upper surface of the wrist, which is armed with a short acute tooth at the inner angle. The hands are quite as long as

the length of the cephalothorax. The palm is once and a half as long as the horizontal length of the fingers and as long as high; the outer surface is convex and perfectly smooth, presenting only a faint longitudinal line on the lower part, which proceeds somewhat obliquely from the articulation of the wrist to the tip of the immobile finger. The upper surface of the palm is margined above and the inner surface presents a few oblique rugose lines immediately below that margin. The upper margin of the dactylus is somewhat rugose at the base, for the rest the fingers are quite smooth; their tips are excavated and the inner margins feebly denticulated. Much smaller are the hands of the female, measuring only about two thirds of the length of the carapace; the fingers are as long as the palm and the latter is marked with some oblique rugose lines below near the articulation of the wrist. The ambulatory legs are short and stout. The meropodites of the last pair of legs have the distal angle of their inferior margin rounded; those of the penultimate pair present slight traces of two or three teeth; these small teeth, finally, are rather distinct at the distal angle of the inferior margin of the meropodites of the two anterior pairs. I may add that the meropodite of the right leg of the last pair in our male specimen shows faint traces of two teeth, which I have figured, whereas this limb is rounded on the left side. The dactylopodites are short, stout and spiniferous. The legs are nearly glabrous, only a few rows of short hairs being observed on the upper and lower surfaces of the carpopodites and propodites. The upper surface of the carapace is marked, on a violet-reddish ground-colour, with yellowish spots and lines, especially on the branchial, mesogastric, cardiac and intestinal regions. The anterior legs present a reddish ground-colour above, and are marked with yellow; the hands have a yellow outer surface, showing reddish reticulate lines on its upper part. The ambulatory legs present yellow markings on a reddish-violet ground-colour.

These two individuals have the following dimensions:

	♂	♀
Greatest width of the cephalothorax. .	42 mm.	$25^1/_2$ mm.
Distance between the external orbital angles	34 »	$22^1/_3$ »
Breadth of the front, anteriorly . . .	21 »	$13^3/_4$ »
Length of the cephalothorax	35 »	22 »

The cephalothorax of the (smaller) female specimen appears a little less enlarged than that of the male.

Like Kingsley, I presume *Leptograpsus gonagrus* H. Milne Edw., of which the habitat is unknown, to be identical with this species. *Pachygrapsus maurus* Lucas represents our species in the Mediterranean Sea and seems to differ by the front, which is slightly emarginate in the middle and the external angles of which are not dentiform.

Pachygrapsus crassipes Randall inhabits California and the Sandwich Islands.

23. *Plagusia speciosa* Dana.

Plagusia speciosa, Dana, l. c. p. 369, Pl. XXIII, fig. 9.

One male from Paumotu and an ova-bearing female of which the locality is unknown.

As has already been observed by Miers (Report on the Brachyura of the Challenger Expedition, 1886, p. 273, footnote), this species differs in many points from *Plag. immaculata* Lam. and from the closely allied *Plag. depressa* Say.

The cephalothorax of *Plagusia speciosa* is broader anteriorly than the cephalothorax of *Plag. immaculata*, the distance between the external orbital angles being considerably larger in proportion to the length of the carapace. The upper surface is convex in the same degree; the tubercles are also depressed, but all are bordered anteriorly by a fringe of short stiff hairs, as in *Plag. tuberculata* Lam. The lateral margins are armed, behind the dentiform external orbital angles, with only two teeth, those of *Plag. immaculata* and *depressa* however with three; these teeth are, however, comparatively

larger and stouter than in the two lastnamed species. The anterior margin of the epistoma is divided in *Plag. immaculata* as well as in *Plag. speciosa* into three lobes, of which the middle one is much smaller than the two lateral ones. The two lateral lobes present three (or more) secondary lobes in the former species, but I observe in those of the male specimen of *Plag. speciosa* only one single small incision, and in the female the lateral lobes are even entire. The inferior margin of the orbits, on the contrary, appears entire in *Plag. immaculata*, but in *Plag. speciosa* this margin presents a larger emargination near the internal angle and several smaller ones between this incision and the external angle, so that the margin appears irregularly denticulate or lobate.

The third, fourth, fifth and sixth segment of the abdomen of the male are coalescent; the abdomen is smooth, and marked with some faintly impressed transverse lines. The segments of the sternum bear also a few impressed lines, of which those of the anterior segment are for a part fringed by short stiff hairs. In the female the third, fourth and fifth segment are coalescent and here the abdomen is also ornamented with a number of transverse and symmetrical impressed lines, each of which is bordered by a fringe of short stiff hairs. The sternum and the abdomen of the male of *Plag. immaculata*, however, present no impressed lines, and the fourth, fifth and sixth segment only seem to be coherent; the abdomen of the female of that species is seven-jointed and also smooth.

The hands are stouter, more robust and comparatively higher than those of *Plag. immaculata*. Those of the male are about once and a half, those of the female scarcely twice as long as high; the hands of *Plag. immaculata* are comparatively less high and therefore more slender. The hands of Dana's species present a greater resemblance to the form we observe in the species of the genus *Grapsus*. The convex outer surface of

the hands shows a few impressed longitudinal lines, each of which is bordered by a fringe of very short stiff hairs; on the upper margin two similar lines are observed, between which many very small and rounded tubercles are seen. The inner surface of the palm appears granulated in the middle and below near the lower margin, and those granulated parts are separated from one another by smooth portions. The dactylus is tuberculiferous above and externally and presents three longitudinal furrows, which are bordered by very short stiff hairs.

The ambulatory legs wholly resemble those of *Plag. immaculata* in form and length and the anterior margin of the meropodites is armed in both species with a single acute tooth, a little before the distal end. Whereas, however, the lower surface of the ambulatory legs of *Plag. immaculata* is entirely smooth, those of *Plag. speciosa* are marked with numerous impressed lines, each of which is bordered by a fringe of short stiff hairs; these lines run transversely on the meropodites, and longitudinally on the carpo- and propodites. The lobes above the bases of the second and third pairs of ambulatory legs are small and dentate.

The dimensions of these two specimens are as follows:

	♂	♀
Distance between the external orbital angles	23 mm.	$20^1/_2$ mm.
Length of the cephalothorax, the epistoma included	29 »	25 »

The dimensions of two specimens of *Plag. immaculata*, however, are as follows:

	♂	♀
Distance between the external orbital angles	14 mm.	$16^1/_3$ mm.
Length of the cephalothorax, the epistoma included	19 »	24 »

Plagusia speciosa Dana is a very rare species and has hitherto only been recorded from the Paumotu Archipelago.

24. *Clistocoeloma merguiensis* de Man.

Clistocoeloma merguiensis, de Man, in: The Journal of the Linnean Society of London. Vol. XX, 1888, p. 195, Pl. XIII, fig. 10.

One female without eggs, from Amboina.

This specimen is exactly twice as large as the specimen from the Mergui Archipelago which I have described (l. c.), but nevertheless it presents nearly all the distinguishing characters of the type specimen. The compressed antero-lateral margins, however, are provided only with two teeth, including the external orbital angle: I find no trace of the third tooth which exists in the Mergui specimen. The three last joints of the ambulatory legs present also a somewhat more slender form on the quoted figure than in this specimen from Amboina.

With the exception of the hands, the whole animal is covered with a very short, dark brown close down, and the legs are moreover still a little hairy; the dactylopodites are also tomentose and hairy. The ground-colour of the cephalothorax and of the legs beneath the down is an ochreous yellow. The right chelipede is a little larger than the left; the hands are almost entirely glabrous, the upper margin of the palm presents a longitudinal crest and the upper margin of the dactylus is covered along its proximal half with a row of 12—14 very small, somewhat transverse tubercles. The upper margin of the mobile finger of the much younger Mergui specimen is described as being punctate, the small tubercles evidently being not yet sufficiently developed to be observed.

Dimensions:

	♀
Distance between the extra-orbital teeth . . .	16 mm
Length of the carapace	13½ »
Breadth of the front	10½ »

Provisionally I refer this form to *Clistoc. merguiensis*.

Genus ***Sesarma*** Say.

I. Lateral margins entire. Hands in the male without pectinate ridges.

25. *Sesarma Aubryi* A. Milne Edw.

Sesarma Aubryi, A. Milne Edwards, Nouvelles Archives du Muséum, T. IX, p. 307, Pl. XVI, fig. 3.

One male specimen from the Pacific Ocean, a second from the Island of Morotai, collected by Bernstein, and an ova-bearing female from Amboina.

I give below the dimensions of these specimens and of two others which belong to *Metasesarma Rousseauxi* H. Milne Edw., a species which presents a most striking resemblance to *Sesarma Aubryi* in its outer appearance.

The front of *Sesarma Aubryi* is exactly half as broad as the greatest width of the cephalothorax, but the front of *Metasesarma Rousseauxi* is always a little broader. The penultimate joint of the male abdomen of *Sesarma Aubryi* is comparatively a little broader and shorter than in the other species, and the terminal segment of the female abdomen is more profoundly pushed into the penultimate segment than is the case in the *Metasesarma* [1]).

	Sesarma Aubryi.			*Metas. Rousseauxi.*	
	1.	2.	3.		
	♂	♂	♀	♂	♀
	mm.	mm.	mm.	mm.	mm.
Greatest width of the cephalothorax	14	13	$11\frac{1}{2}$	$14\frac{1}{2}$	$12\frac{3}{4}$
Breadth of the upper margin of the front.	$6\frac{4}{5}$	$6\frac{1}{2}$	$5\frac{3}{4}$	$8\frac{1}{6}$	$7\frac{1}{6}$
Length of the cephalothorax	12	$11\frac{2}{3}$	10	$12\frac{1}{2}$	$11\frac{1}{2}$

1) I have given the dimensions of four specimens of these species in: Zoolog. Jahrbücher, Bd. II, 1887, p. 661. I may observe that only the adult male from New Guinea belongs to *Sesarma Aubryi*, the three others, however, to *Metasesarma Rousseauxi*!

N°. 1 is the male from the Pacific Ocean, N°. 2 the male from Morotai, N°. 3 the female from Amboina.

II. Lateral margins dentate. Hands in the male without pectinate ridges.

26. *Sesarma Edwardsii* de Man, var.: *brevipes* de Man.

Sesarma Edwardsii, var.: *brevipes* de Man, in Zoolog. Jahrb. von J. W. Spengel, Bd. IV, 1889, p. 425, Taf. IX, fig. 6.

Two females from unknown locality, of which the larger has the following dimensions:

Distance between the external orbital angles	$16^3/_4$ mm.
Length of the cephalothorax	$14^3/_4$ »
Breadth of the front.	$9^4/_5$ »

27. *Sesarma Smithii* H. Milne Edw.

Sesarma Smithii, H. Milne Edwards, Archives du Muséum, T. VII, p. 149, Pl. IX, fig. 2.

Sesarma Smithii, de Man, in: Zoolog. Jahrb. von J. W. Spengel, Bd. IV, 1889, p. 426.

A male and a female from the Fiji Islands, which present the following dimensions:

	♂	♀
Distance between the external orbital angles	$26^2/_3$ mm.	$23^1/_4$ mm.
Greatest width of the cephalothorax	$31^1/_4$ »	$26^3/_4$ »
Length of the cephalothorax, in the middle.	$27^3/_4$ »	$23^1/_4$ »
Breadth of the front, between the eyes	$14^1/_2$ »	$12^3/_4$ »
Horizontal length of the hand . .	30 »	21 »
» » » » fingers . .	19 »	14 »
Height of the hand	19 »	12 »

The cephalothorax of the female specimen is exactly as long as the distance between the external orbital angles: in still younger specimens this distance will be larger than the length.

28. *Sesarma atrorubens* Hess.

Sesarma atrorubens, Hess, Beiträge zur Kenntniss der Decapoden-Krebse Ost-Australiens, 1865, p. 653. — de Man, in: Zoolog. Jahrb. von J. W. Spengel, Bd. II, 1887, p. 676.

Two male specimens from the Fiji Islands.

These individuals are a little larger than the male, of which I have given a description in the »Zoologische Jahrbücher," and the joints of their abdomen are somewhat less enlarged in proportion to their length, so that e.g. the posterior margin of the penultimate segment is not yet twice as long as the length of this segment. As may be seen from the dimensions given below, the posterior margin of the cephalothorax of adult males is a little less broad than the breadth of the front, whereas in younger individuals the front is a little less broad than the posterior margin. For the rest the dimensions agree, as to their proportion, with those I have given in the Zoologische Jahrbücher, l. c.

The larger specimen presents the following dimensions:

	♂	
Distance between the external orbital angles	32½	mm.
Greatest width of the cephalothorax . . .	42	»
Length of the cephalothorax, in the middle	37	»
Breadth of the front between the eyes . .	16¼	»
Breadth of the posterior margin of the cephalothorax	15¾	»
Breadth of the posterior margin of the penultimate abdominal segment	13¼	»
Length of this segment	7	»
Horizontal length of the hand	33	»
» » » » fingers.	21½	»
Height of the hand	18½	»

29. *Sesarma trapezoidea* Guérin.

Confer: de Man, in: Zoolog. Jahrbücher, herausgeg. von J. W. Spengel, Bd. II, 1887, p. 678; — id. Bd. IV, 1889, p. 426—427, Pl. IX, fig. 7 and Pl. X, fig. 8.

The collection contains one male specimen and an ova-bearing female from the Pacific Ocean, and two other females from Amboina, of which the smaller is also provided with eggs. These specimens present the following dimensions:

	Pacific Ocean.		Amboina.	
	♂	♀	♀	♀
	mm.	mm.	mm.	mm.
Distance between the extra-orbital teeth	24 2/3	18	25	21 1/2
Breadth of the cephalothorax above the third pair of legs	32	23	28 1/2	25 1/2
Length of the carapace, in the middle line	30 1/4	22	29 1/2	25 1/3
Breadth of the front at its superior margin	13	9	14	11 1/2
Breadth of the posterior margin of the cephalothorax	10 1/2	9 1/4	11	10 1/2
Horizontal length of the hand	23	9 1/2	14	
» » » » fingers	11 1/2	5 1/3	7 3/4	
Length of the meropodites of the penultimate pair of legs	26	18		20
Length of the propodites of the penultimate pair of legs	17 1/2	13		14 1/2
Length of the dactylopodites of the penultimate pair of legs	13	9		10 1/2
Length of the meropodites of the last pair of legs	19 1/3	13 1/4		15 1/2
Length of the propodites of the last pair of legs	13	9 1/2		11
Length of the dactylopodites of the last pair of legs	12	8		9

I have described, two years ago, a male from the Fiji Islands as a variety »*longitarsus*", characterized, besides by comparatively longer dactylopodites, by a few other slight differences regarding the form of the cephalothorax and the relative length of the meropodites of the ambulatory legs. In the two individuals from the Pacific Ocean, quoted above, the dactylopodites of the ambulatory legs are also elongate, as in the male from the Fiji Islands, but the cephalothorax presents quite the same form and the meropodites have almost the same length as in the type. Thus the front is comparatively less broad than in the male from the Fiji Islands and the four postfrontal lobes are less prominent and situated in a rather concave line both in the male and in the female. As in the type, the distance between the epibranchial teeth is again a little larger than the distance between the external orbital angles, whereas in the male from the Fiji Islands the external orbital angles are, on the contrary, a little more distant than the epibranchial teeth. The variety »*longitarsus*" may therefore afterwards prove to be an individual variation.

The two female specimens from Amboina agree very well with the type. The postfrontal lobes are less prominent than in the male from the Fiji Islands and situated in a very slightly concave line; as regards the epibranchial teeth, they are just as far distant from one another as the external orbital angles.

III. The third section, in which the lateral margins of the cephalothorax are entire and the hands in the male provided with pectinated ridges, contains at present *nine* indo-pacific species, which may be characterized as follows:

A. Inferior margins of the meropodites of the ambulatory legs entire.

Lateral margins parallel, front exactly half as broad as the distance between the extraorbital teeth . . . . . *picta* de Haan.

Lateral margins more or less convergent backwards, front constantly a little broader than half the distance between the external orbital angles.

- Tubercles of the upper margin of the dactylus in the male symmetrical, oval, with a smooth transverse ridge in the middle. . . . . *quadrata* Fabr.
- Tubercles of the upper margin of the dactylus in the male scalariform.
  - Dactylopodites extraordinarily short, measuring $^1/_3$ of the length of the propodites . . . . . *leptosoma* Hilg.
  - Dactylopodites of usual length, measuring at least $^2/_3$ of the length of the propodites.
    - Inner surface of the hands in the male without a distinct granulated crest; front deeply emarginate. . *Melissa* de Man.
    - Inner surface of hands in male with a distinct granul. crest.
      - Pectinated ridges parallel with the oblique proximal margin of hand; front very slightly emarginate . . *erythrodactyla* Hess.
      - Pectinated ridges not parallel with the oblique proximal margin of hand; front deeply emarginate . *bataviana* de Man.

B. Inferior margins of the meropodites of the ambulatory legs dentate.

Fingers externally thickly clothed with hairs . . . . . *barbimana* de Man.

Fingers externally glabrous,
- Upper surface of the hands of the male with two pectinated ridges . . . . . *edamensis* de Man.

Fingers externaly glabrous. { Upper surface of the hands of the male with two longer and seven or eight shorter pectinated ridges . . *Andersoni* de Man.

30. *Sesarma quadrata* Fabr.

Sesarma quadrata, Fabricius, Supplem. Entomol. System. p. 341.
Sesarma quadrata, de Man, in: Zoolog. Jahrb. herausgegeben von J. W. Spengel, Bd. II, 1887, p. 655.

The Leyden Collection contains the following specimens: one male from Padang, another male from Macassar, a young male collected at Bezoeki, three male specimens from the Indo-pacific Seas, of which the exact locality is unknown, and finally the male type specimen of *Sesarma affinis* de Haan from Japan.

These specimens present the following dimensions:

	Macassar.	Padang.	Indo-pacific Seas.			type specimen of *Sesarma affinis* de Haan. Japan.
	♂ mm.	♂ mm.	♂ mm.	♂ mm.	♂ mm.	♂ mm.
Distance between the external orbital angles.	20	21	$19\frac{1}{3}$	18	$16\frac{1}{4}$	$19\frac{1}{4}$
Length of the cephalothorax .	$16\frac{1}{4}$	$16\frac{1}{2}$	$14\frac{2}{4}$	$14\frac{1}{2}$	$12\frac{2}{4}$	$14\frac{2}{4}$
Breadth of the front . . .	$11\frac{1}{2}$	$12\frac{2}{4}$	$11\frac{1}{2}$	11	$9\frac{1}{4}$	11

The male specimen from Macassar, on account of the proportion of the distance between the external orbital angles and the length of the cephalothorax, must be referred to the variety *aspera* Heller, this specimen being a little longer than the original specimen of Fabricius. The upper margin of the mobile finger, however, presents only twelve oval, transverse tubercles as in the type specimen, so that this crab makes a transition to the type. The inner surface of the palm is provided with a rather prominent, transverse, granulated crest, composed of twelve granules.

The front of the male specimen, collected at Padang, is a little broader in proportion to the distance between the external orbital angles than the front of the specimen which was described by Fabricius. The inner surface of the equal hands presents a short granulated crest, composed of five to seven granules, and the dactylus bears thirteen or fourteen oval transverse tubercles. These tubercles are symmetrical and the transverse smooth ridge lies quite in the middle of each; in the Macassar specimen that ridge lies somewhat nearer to the distal end of the tubercle.

The Japanese male specimen, finally, wholly agrees with the type, but the mobile finger is ornamented only with seven or eight tubercles, and the crest on the inner surface of the hands is scarcely distinguishable. I consider this form as a variety: *affinis* de Haan.

Sesarma quadrata Fabr. is probably a rather rare species and the dimensions seem to be somewhat variable. A large number of specimens from different localities are necessary to make us better acquainted with these varieties.

31. *Sesarma erythrodactyla* Hess.

Sesarma erythrodactyla, Hess, Beiträge zur Kenntniss der Decapoden-Krebse Ost-Australiens, 1865, p. 25, Pl. VI, fig. 10. — de Man, in: Zoolog. Jahrbücher, herausgegeben von J. W. Spengel, Bd. II, 1887, p. 686, and Bd. IV, 1889, p. 436.

The Leyden Collection contains two young males from Sydney and a third also young male individual from the Pacific Ocean. The number of transverse prominences on the mobile finger of the chelipedes amounts to 23 in the largest, to 25 in the following and to 22 in the smallest specimen. In all these specimens the transverse granulated crest on the inner surface of the hands is very distinct. The outer surface of the palm presents in all, about in the middle, a short minutely granulated transverse line, but I do not know whether this ridge occurs also in the adult or not. The outer surface of the fingers is rather

convex and smooth. This species is also characterized by the yellowish red colour of the fingers.

The two largest specimens have the following dimensions:

Distance between the external orbital angles	$15^2/_3$ mm.	$15^1/_4$ mm.
Length of the cephalothorax	$12^1/_3$ »	12 »
Breadth of the front	$9^1/_3$ »	9 »

32. *Sesarma bataviana*, n. sp.

(Pl. 6, fig. 12).

One single male specimen, collected by Mr. J. Semmelink on the seashore of Batavia.

This species which is positively different from *Ses. quadrata* Fabr., *Ses. picta* de Haan and *Ses. erythrodactyla* Hess, may perhaps prove to be identical with *Ses. Melissa* de Man, which inhabits the Bay of Bengal, off the coast of Tenasserim. But as I have no typical specimen of the Mergui species before me, I cannot decide this question.

Sesarma bataviana belongs to that section of the genus, in which the lateral margins are entire and in which the upper surface of the palm in the male is provided with parallel pectinated ridges. In comparing our specimen with the figure of *Sesarma Melissa*, which I have published in my Report on the Crustacea of the Mergui Archipelago, I hardly find any difference. The proportion of the distance between the external orbital angles and the length is the same in both species, but the front is a little broader in *Ses. Melissa* and in *Ses. erythrodactyla*. The upper surface presents the same interregional grooves as in the Mergui species; small tufts of short hair are scattered on it, especially on the postfrontal lobes. The front is a little broader than half the distance between the external orbital angles; the four subequal postfrontal lobes are but little prominent, and project less forward than the inferior margin of the front.

The inferior margin is, as in *Ses. Melissa*, rather

profoundly and widely emarginate in the middle, and presents therefore on each side of this median sinus a rather prominent, rounded lobe; the inferior frontal margin of *Ses. erythrodactyla,* however, is scarcely emarginate and the lateral lobes are much less prominent. As in *Ses. Melissa*, the orbits are rather large, the external orbital angles acute and prominent, and the lateral margins are slightly concave; the lateral sides of the upper surface are wrinkled by several oblique elevated lines.

The anterior legs are of equal size and rather large. The upper margin of the arms terminates in an acute tooth, as in *Ses. Melissa*; in *Ses. erythrodactyla* this tooth does not exist, the upper margin terminating, before the distal end, in an obtuse angle. As in the Mergui species, the anterior margin is also armed with an acute spine. The upper surface of the wrist is covered with minutely granulated transverse lines and unarmed at its internal angle. The hands (fig. 12) are characteristic. They are of equal size and a little more than once and a half as long as high, the palm about as long as high, and the fingers horizontally as long as the palm. The inner margin of the upper surface of the palm rises a little towards its distal end; the upper surface presents two parallel pectinated ridges, of which the anterior one consists of 17 horny teeth, the posterior one of 13. The pectinate ridges have a different direction in this species and in *Ses. erythrodactyla*: in the latter they run very obliquely, close to and parallel with the oblique posterior margin of the upper surface, the two ridges being as far distant from one another as the posterior ridge from the posterior margin; in *Ses. bataviana*, however, the ridges do not run parallel with the oblique posterior margin of the upper surface, but they form right angles with the short raised inner margin of it, thus leaving a triangular space between the posterior ridge and the posterior margin. I suppose,

when looking at fig. 7 of Plate XII of my Report on the Crustacea of the Mergui Archipelago, that the pectinate ridges have the same oblique direction in *Ses. Melissa* and in *Ses. erythrodactyla*, but I am quite unable to resolve this question.

The upper surface of the palm in our new form appears a little more granular, than in *Ses. erythrodactyla*, the granules being arranged mostly in oblique lines, which run from the pectinate ridges to the proximal margin of the upper surface. The outer surface of the palm is minutely granular, like in *Ses. erythrodactyla*; these granules are more crowded towards the base of the immobile finger and gradually appear arranged in oblique lines towards the rounded under margin. The proximal half of the outer surface of the immobile finger is flattened and distinctly separated from the under margin of the finger by a longitudinal ridge; the distal end of the finger is, however, convex and rounded. In *Ses. erythrodactyla* the whole outer surface of the index appears convex, smooth and rounded, and does not present the described longitudinal ridge.

The upper margin of the dactylus bears a row of 20—21 transverse-prominences, which have exactly the same structure as in *Ses. erythrodactyla*; they are namely scalariform, the proximal part of each prominence being depressed, minutely and longitudinally striated, and larger than the obliquely descending distal part. According to my description of *Ses. Melissa*, the anterior distal declivity of the transverse prominences should be larger in this species than the posterior or proximal one, but I have afterwards observed (Zoolog. Jahrbücher, Bd. IV, 1889 p. 435) that this description perhaps may be incorrect. The upper surface of the mobile finger is somewhat granular at the base, but the rest of its outer surface is smooth. The inner surface of the palm is somewhat granular and provided with a short, but prominent granulated transverse crest, composed of six or seven granules. This crest is the prin-

cipal difference I find in comparing our specimen with the description of *Ses. Melissa*, this species being described as presenting only a trace of a crest.

The ambulatory legs c o m p l e t e l y resemble those of *Sesarma Melissa* and are somewhat more slender than those of *Ses. erythrodactyla.*

Only by examining a large number of specimens, both from the Mergui Archipelago and from the seashore of Batavia, it will be possible to decide whether *Ses. Melissa* is identical with *Ses. bataviana* or not.

The dimensions of this specimen are as follows:

Distance between the external orbital angles	16 mm.
Length of the cephalothorax	13 »
Breadth of the front	$8^2/_3$ »
Length of the hands	$13^1/_2$ »

33. *Sesarma barbimana*, n. sp.

(Pl. 6, fig. 13).

One single male specimen, collected by Mr. Semmelink in 1882 on the seashore of Batavia.

This very small new species is closely allied to *Ses. Andersoni* de Man, which inhabits the Mergui Archipelago, but may be distinguished at first sight by the structure of the hands. The cephalothorax presents nearly the same form. It is a little broader than long, and the distance between the external orbital angles is only once and a third as long as the length. The upper surface is depressed and presents the ordinary interregional grooves as in *Ses. Andersoni*, but instead of being quite glabrous and smooth, it is ornamented, especially anteriorly, with numerous, small, transverse tufts of very short stiff black hairs. When seen under a magnifying glass, the upper surface appears moreover rather coarsely punctate, especially in the middle and posteriorly. The front is as broad as in *Ses. Andersoni* and vertically deflexed: its anterior

margin is slightly and widely emarginate in the middle. The orbits are large, and the short and thick eye-peduncles project a little beyond the external orbital angles, which are less prominent than in *Ses. Andersoni*. The four post-frontal lobes are subequal and separated from one another by shallow grooves; they project still less forward than in the Mergui species. The upper orbital margin is very oblique. The lateral margins of the carapace are sharp and compressed anteriorly; they run for a short distance behind the external orbital angles rather parallel, but afterwards converge backward rather rapidly and become slightly concave. The sides of the upper surface are wrinkled by several oblique elevated lines and the foremost of these lines projects a little outward beyond the lateral margin, so that the latter presents a trace of a second tooth, quite as in *Ses. Andersoni*. As regards the under surface of the cephalothorax, the external maxillipedes and the male abdomen, both species nearly agree with one another.

Unfortunately, our single specimen has lost the left chelipede, so that I cannot say if they are unequal in size like in *Ses. Andersoni*. The ischiopodite bears a small acute tubercle anteriorly. The acute upper margin of the arm is entire, and its distal end does not terminate in a tooth. The anterior margin is dilated distally so as to form a triangular crest which is minutely denticulate anteriorly. The outer surface of the arm is transversely rugose. The upper surface of the wrist is covered with finely granulated transverse lines, many of which bear short and stiff black hairs, similar to those on the upper surface of the cephalothorax. The inner angle of the wrist is unarmed. The hands (fig. 13) are characteristic. As regards the proportion of the horizontal length of the hand to the height of the palm, our species almost agrees with *Ses. Andersoni*. The fingers are horizontally quite as long as the palm. The slightly convex outer surface of the latter is quite smooth in the middle, but covered with minutely granular and somewhat hairy lines near the articulation of the wrist.

The upper margin of the palm is also finely granular and bears a pectinated ridge which runs in an arcuate line from the distal end of the inner margin of the upper surface to the middle of the proximal margin of it; this ridge consists of nearly twenty horny teeth, which decrease in length towards the posterior margin; behind this ridge still a shorter one occurs, formed by a much smaller number of shorter teeth. Our species therefore differs from *Ses. Andersoni*, the upper surface of the palm of which presents seven or eight short, transverse and parallel ridges placed before the principal ridge, between the latter and the distal margin of the upper surface. Like in *Ses. Andersoni* an elevated slightly sinuous line runs on the outer surface of the palm, not far from the under margin, from the articulation of the wrist to near the extremity of the index. The under surface of the palm and of the index is rounded, convex and smooth. The outer sides of the fingers are slightly concave and thickly clothed with dark brown hairs, which form woolly patches, similar to those which are found in several other Grapsidae; the fingers, however, are quite glabrous at their tips. The upper margin of the mobile finger, which is distinctly separated from its slightly concave, hairy outer surface, is covered with a row of twelve transverse ridges, similar to those which ornament the dactylus of *Ses. Andersoni*. The upper surface of the finger is somewhat granular at the base on the inner and a little hairy on the outer side. Both fingers have slightly excavated horny tips; the inner margin of the dactylus presents four small teeth, of which the distal one is a little larger than the preceding; the inner margin of the index is armed in the middle with two teeth, placed close together, and a little larger than those of the mobile finger, and with a third small tooth immediately before the horny tip. The inner surface of the palm is finely granular, but the fingers are smooth internally.

The ambulatory legs resemble those of *Ses. Andersoni*,

but they are probably a little shorter and a little less slender. The meropodites are perhaps a little more enlarged; their upper margin terminates, before the distal end, in a tooth and the inferior margin is denticulate, presenting, along the distal end, several acute teeth of which the proximal one is the largest and the others gradually decrease in size towards the articulation of the wrist. The ambulatory legs are somewhat hairy like those of *Ses. Andersoni.*

Our specimen has a reddish ground-colour and the outer surface of the hand is violet.

	♂
Distance between the extraorbital teeth.	$10^3/_4$ mm.
Length of the cephalothorax	$8^1/_4$ »
Breadth of the front.	$6^1/_3$ »

34. *Eupagurus hirtimanus* White.

Pagurus hirtimanus, White, List Crust. British Museum, 1847, p. 60 (sine descriptione).

Eupagurus japonicus?, Miers, Annals and Magazine of Natural History, 5th ser. vol. V, 1880, p. 375, Pl. XIV, fig. 6 and 7.

Eupagurus hirtimanus, de Man, in: Archiv f. Naturgeschichte, Jahrg. 53, 1888, p. 426.

? *Eupagurus sinuatus*, Stimpson, Proc. Acad. Nat. Sciences of Philadelphia, 1858, p. 250.

Two specimens, ♂ and ♀, from the Island of Ponapé.

Both specimens certainly belong to White's species which was described firstly by Miers and recently by myself, but it appears very probable to me that *Eup. sinuatus* Stimps. from Sydney is identical with this species. If this is really the case, Stimpson's name has the priority, because White has not published a description. The internal margin of the right hand presents a narrow but rather deep emargination near the articulation of the wrist as well as near that of the mobile finger, so that Stimpson's definition »margine interno ad manus dactylique commissuras sinuato" is quite applicable to our species. Both specimens are younger than the specimen from Amboina, lately described by me, and it is for that reason that the peduncles

of the external antennae are comparatively a little shorter, so that the eye-peduncles reach still to the distal third of the terminal joint, and secondly that the eye-peduncles are a little longer than the hairy basal spine of these antennae.

The anterior margin of the outer surface of the arms of the chelipedes is armed along its distal half with sharp spinules which are larger on the left chelipede than on the right one.

The propodites of the second and third pair of legs present traces of a reddish transverse ring or band.

This species in characterized by the triangular wrist of the right chelipede, being as long as measures the breadth of its anterior margin, which is still slightly shorter than the length of the palm and presenting on its upper surface two parallel rows of spinules, between which the wrist appears smooth and glabrous — and finally by the dactylopodites of the second and third pair of legs being shorter than the propodites.

The cephalothorax of the female is 9 mm. long, the larger hand is $8^3/_4$ mm. long, and the palm is 6 mm. broad.

Eup. hirtimanus has been also recorded from the Philippines and from the Fiji Islands; its geographical range would be rather extensive, when this species should be indeed identical with *Eup. sinuatus* Stimpson.

The nearest ally of this species is *Eupagurus Traversi* Filhol from Cook's Straits and from Stewart Island, but the larger hand of this form is armed with six longitudinal rows of sharp conical tubercles.

35. *Calcinus elegans* H. Milne Edw.

Pagurus elegans, H. Milne Edwards, Annales des Sciences Naturelles, 2e Série, Tome VI, 1836, p. 278, Pl. XIII, fig. 2.

Two specimens from the Pacific Ocean. [1])

1) I may observe that Milne Edwards evidently does not characterize at all his *Pagurus chilensis* (l. c. p. 279), when he says that the eye-peduncles are

This species is at first sight distinguished by its coloration. Our specimens do not fully agree with the figures of this species, published by Dana (Pl. XXVIII, fig. 10). Firstly the eye-peduncles are comparatively a little longer in our specimens, secondly the basal scales of the outer antennae are spinose not only at the internal, but also at their external margin, and the legs of the second and of the third pair, finally, present a somewhat less slender form.

I may add the following about our specimens. The cephalothorax is moderately convex and smooth; a few small tufts of hair exist on the anterior part in front of the cervical suture, which is distinctly longer than broad; these tufts are implanted near the lateral margins, and a few occur also on the posterior membranaceous part immediately behind the cervical suture. The anterior margin of the cephalothorax has been exactly figured by Dana (Pl. XXVIII, fig. 10*b*). The V-shaped groove is distinct and the upper surface of the cephalothorax is punctate. The eye-peduncles are much longer than the anterior margin of the cephalothorax, viz. about once and a half as long; the ophthalmic scales terminate in a small spinule and are small and triangular. The peduncles of the external antennae project a little beyond the middle of the eye-peduncles. The basal joint presents a minute spinule at the distal end of the inner margin and two others on that of the outer one; the antennal scale is short, spiniform and hairy, it projects but little beyond the distal end of the penultimate joint of the antennal peduncle, and is armed on each side with two or three sharp spinules. The penultimate joint of the antennal peduncle presents a sharp spinule anteriorly as well as posteriorly at the distal end, and the flagella are glabrous.

much longer than the breadth of the anterior margin of the cephalothorax, because they have comparatively the same length in *Calcinus elegans*. This is at first sight obvious when looking at the figures of the two species, published by the french author.

The upper margin of the wrist of the left chelipede terminates in a small sharp tooth, and the upper surface presents a tubercular eminence, which occurs also in other species of this genus and which is separated from the upper margin by a groove. The larger hand is scarcely compressed, the palm is quite as long as high and the fingers are a little shorter than the palm. The outer surface of the palm is slightly convex and smooth, the upper margin more or less rounded, like the lower margin. The fingers, when closed, only leave a small hiatus between themselves and are covered everywhere with very small tubercles, which are more or less rounded and of different size; the mobile finger is armed with three teeth, which decrease in size towards the tip, the index presents also two or three teeth. A few small tubercles, similar to those of the fingers, are seen on the distal part of the outer surface of the palm.

The lower margin of the outer surface of the arm of the right chelipede presents two or three spinules a little before the distal end; the acute upper margin of the wrist presents two very small spinules and terminates in a somewhat larger one. The compressed right hand presents about the same form as in other species of this genus. The sharp upper edge is armed with five teeth; the palm is a little higher than long and nearly as long as the fingers.

The upper margin of the mobile finger presents two rows of sharp small teeth, and similar, more or less acute and small tubercles exist on the distal part of the outer surface of the palm; the index, finally, is also every where beset with small tubercles. The right hand is somewhat hairy on the upper as well as on the lower margin.

The dactylopodites of the second pair of legs are a little shorter, those of the third pair about as long as the propodites. These two pairs of legs are hairy at their inferior margin and the dactylopodites and propodites of the third pair especially are covered with dense and long hairs.

The cephalothorax of the larger specimen has a length of 12 mm.; the anterior part in front of the cervical suture is 6 mm. long and $4^3/_5$ mm. broad, and the anterior margin is $4^1/_4$ mm. broad. The eye-peduncles have a length of 6 mm., and are as long as the anterior part of the cephalothorax. As regards the coloration, our specimens fully agree with Dana's description.

This species has been recorded from New Ireland (Milne Edwards), Tahiti (Heller) and the Loo Choo Islands (Stimpson).

36. *Calcinus nitidus* Heller.

Calcinus nitidus, Heller, Novara-Reise, 1865, p. 89, Pl. VII, fig. 4.

Three specimens, one from Tahiti, the two others from an unknown locality.

This species differs from *Calcinus elegans* Milne Edw. especially by the quite different coloration and by the second and third pair of legs being more slender and less hairy.

Our specimens are all very young and it must perhaps be attributed to their very small size that the fingers of the larger hand are not gaping and that the tubercle on the upper surface of the wrist of the left chelipede is distinctly developed, for I suppose that this tubercle was worn off and therefore less distinct in Heller's adult specimens. As regards the structure of the cephalothorax, the eye-peduncles and antennae, our species agrees very much with *Calcinus elegans*. The anterior legs are also similar in both species, but the fingers are more finely granulate and gaping in adult specimens.

The second and third pair of legs are more slender, much less hairy and their dactylopodites are considerably shorter than the propodites.

The cephalothorax, the eye-peduncles and the anterior legs are whitish, and, with the exception of the eye-peduncles, marked with a few large spots of a yellowish

red colour. A single spot is seen on the gastric region of the cephalothorax. The arms and the palmar portion of the hands are marked on the outer as well as on the inner surface with a similar large spot, and the carpopodites of the anterior legs present also a spot on their upper margin near the articulation with the arms; the latter, finally, and the carpopodites present a spot on their under surface. The second and third pair of legs are entirely yellowish red. The dactylopodites are figured too long in Heller's work.

The specimen referred by Lenz and Richters (Beitrag zur Krustaceenfauna von Madagascar, 1881, p. 6) to *Calcinus nitidus* apparently belongs to another species.

Calcinus nitidus Heller inhabits the shores of Tahiti.

37. *Clibanarius vulgaris* Dana.

Clibanarius vulgaris, Dana, l. c. p. 462.

Clibanarius infraspinatus, Hilgendorf, de Man, in: The Journal of the Linnean Society of London, Vol. XXII, 1888, p. 237.

Two young specimens, of which the larger one is an ova-bearing female; the smaller one inhabits a *Natica*-shell. The larger specimen, the cephalothorax of which has a length of 16 mm., fully agrees with a specimen of *Clib. infraspinatus* from the Mergui Archipelago, which I have before me, but the narrow red longitudinal lines, with which the second and third pair of legs are ornamented, are not visible, quite as is the case with the large typical specimen of Herbst's *Cancer clibanarius* in the Berlin Museum. In the other specimen these lines are faintly visible, but on his turn this individual shows some other differences. The right chelipede is namely a little larger than the left, and I find on the inner margin of the immobile finger, no trace of the distal tooth which occurs in adult individuals close to the horny tip. The inner margins of the under surface of the arms present no trace of the elevated dentiform tubercle, by which typical specimens are characterized, and which neither occurs in the

specimen of Herbst, which I regard therefore as a variety (confer: de Man, Archiv für Naturgeschichte, Jahrg. LIII, 1888, p. 441). The cephalothorax of this smaller specimen has only a length of 12 mm.

38. *Clibanarius taeniatus* H. Milne Edw.

Pagurus clibanarius, Quoy and Gaimard, in: Voyage de l'Uranie, Zoologie, Crust. p. 529, Pl. 78, fig. 1 (1824).

Pagurus taeniatus, H. Milne Edwards, in: Annales Sciences Naturelles, Série III, Zool. Vol. X, p. 63 (1848).

Clibanarius taeniatus, Miers, Report on the Zoolog. Coll. made during the Voyage of H. M. S. »Alert", 1884, p. 265.

One specimen inhabiting a *Natica*-shell, from the coast of Queensland or of New South Wales.

This species belongs to those in which the second and third pair of legs are longitudinally striated and in which the dactylopodites of these legs are longer than the propodites. Amongst the indo-pacific species, these characters are presented, besides by *Clib. taeniatus*, by *Clib. lineatus* H. Milne Edw., *Clib. asper* H. Milne Edw., *Clib. vulgaris* Dana, *Clib. striolatus* Dana, *Clib. longitarsus* de Haan and *Clib. padavensis* de Man. I am unacquainted with the two first-named species, but specimens, preserved in spirits, belonging to the four last-named ones, are lying before me, so that I am able to indicate the principal differences by which *Clib. taeniatus* may be distinguished.

This specimen has lost the left chelipede, so that I cannot say if the two chelipedes are similar to one another or not. The differences between this species and *Clib. vulgaris* Dana are not considerable. Firstly I may remark that *Clib. taeniatus* differs from the four other species by the coloration of the cephalothorax. The anterior part of the cephalothorax of *Clib. taeniatus*, in front of the cervical suture, is namely marked with pale coloured longitudinal bands which are bordered by narrow red lines: in the four other species these bands and red lines are wanting. The median frontal tooth of *Clib. vulgaris* is a

little narrower, less enlarged and projects a little more forward than that of *Clib. taeniatus*. The fingers of the hands of *Clib. taeniatus* leave a small hiatus between them when closed, which is not the case in *Clib. vulgaris*; the dentiform tubercles, with which the upper surface of the hands is armed, are a little less numerous in the species of Quoy and Gaimard, but conical, higher and more acute. The horny margin at the end of the fingers of *Clib. vulgaris* is narrow and half as long as the fingers, but somewhat broader and shorter in *Clib. taeniatus*. The inner margin of the under surface of the arms does not present a trace of the elevated dentiform tubercle, which exists in *Clib. vulgaris* (*infraspinatus* Hilgend.). The four other pairs of legs present about the same form and structure in both species. Both species also agree very much with one another, as regards the coloration, but, as I already observed, the anterior part of the cephalothorax is marked with longitudinal bands, which are not found in *Clib. vulgaris*. Two narrow red lines run in *Clib. taeniatus* from the median frontal tooth to the cervical suture; these two lines are close together and slightly diverge backwards; quite in the middle between these lines and the lateral margins of the cephalothorax, on each side another sinuous line is observed, the lateral margins are also striated and between the lateral margins and the submedian lines another red band exists, which posteriorly is divided in two lines. The eye-peduncles are marked with a red longitudinal line in both species. The anterior legs of *Clib. taeniatus* are longitudinally striated by several narrow red lines, but this is not the case in *Clib. vulgaris*. The high conical tubercles on the hands of *Clib. taeniatus* are white and contrast strongly with the ground-colour of the palm. The legs of the second and of the third pair present a similar system of coloration in both species and they are also equally hairy.

Clib. padavensis de Man, from the Mergui Archipelago, may be recognized at first sight by the structure of the

anterior legs, the high, acute, conical tubercles of *Clib. taeniatus* wanting entirely in this species; the palm presents only a few small spinules along the inner margin of its upper surface, but is covered, for the rest, only with some small piliferous lines. The cephalothorax, like that of *Clib. vulgaris*, is never marked with red longitudinal lines, but the chelipedes are striated. The legs of the second and of the third pair present about the same system of coloration in *Clib. taeniatus* and in *Clib. padavensis*.

The two last-named species, *Clib. striolatus* Dana and *Clib. longitarsus* de Haan, are much more hairy than *Clib. taeniatus*. The anterior part of the cephalothorax of *Clib. striolatus* in front of the cervical suture, is more quadrate and comparatively shorter than that of *Clib. taeniatus*; the V-shaped groove, which defines the gastric region posteriorly, is a little more distinct and this part of the cephalothorax is slightly more punctate. The hands are covered with smaller and feebler, dentiform tubercles, the colour of which does not strongly contrast with the ground-colour of the hands. The anterior part of the cephalothorax is marked with some symmetrical red spots, but the longitudinal lines, proper to *Clib. taeniatus* are not found. All the legs are marked in both species with longitudinal lines, the anterior as well as the others, but these lines are of a pink colour in *Clib. striolatus* (in specimens preserved in spirits), less numerous and somewhat differently arranged. Thus e. g. the meropodites of the legs of the third pair of *Clib. taeniatus* are striated on their outer surface, including the two margins, by six red longitudinal lines, four of which run by two and two along the outer surface; in *Clib. striolatus* these meropodites are marked only with three lines, which are widened a little towards the distal end. The outer surface of the carpopodites of these legs presents likewise two pairs of narrow red lines, but in *Clib. striolatus* only two lines are observed, which are more distant from one another and the lower of which is much broader than the upper one.

Clib. longitarsus de Haan finally is more densely hairy and the hairs are much longer. The hands of the male are slightly unequal, and scarcely so are those of the female. The hands of this species are covered on the palm only with flattened, hairy, little prominent granules, like the wrist and the arm, and a few small and acute spines are only observed on the inner margin and on the fingers; these spines are, however, comparatively smaller than those of *Clib. taeniatus*, olive-green and never white. The V-shaped groove on the anterior part of the cephalothorax is distinct, but rather indistinct in *Clib. taeniatus*. In specimens of *Clib. longitarsus*, preserved in spirits, the anterior part of the cephalothorax and the legs are dark olivegreen, sometimes with a reddish tint. The ground-colour of *Clib. taeniatus*, on the contrary, is a pale yellowish red. The cephalothorax and the chelipedes of *Clib. longitarsus* are not marked with longitudinal lines and the legs of the second and third pair agree more closely with *Clib. striolatus*, as regards the coloration, and they present a fine blue longitudinal band on the middle of the outer surface of the joints.

39. *Alpheus pachychirus* Stimpson. (Pl. 6, fig. 14).

Alpheus pachychirus, Stimpson, Proc. of Acad. of Natural Sciences of Philadelphia, 1860, p. 30.

Two young specimens from Tahiti, a male and a female, the latter ova-bearing, are in the Collection. These two individuals do not fully agree with Stimpson's description, but the slight differences are to be ascribed to their younger age. This species indeed, according to Stimpson, attains a length of 25 mm., but our two specimens, at least the male, only measure two thirds of that length. The anterior margin (fig. 14) of the cephalothorax is rather broad and appears at first sight truncate and entire; when examined by a magnifying glass of sufficient power, one observes, however, that the upper surface of the cephalo-

thorax is slightly carinated between the eyes. This slight carina projects as an excessively small point beyond the anterior margin of the cephalothorax; this point is so small, that it is observed, at least in these young individuals, only when examined by a rather strong magnifying-glass. The dorsal interocular carina disappears backward, before reaching the level of the posterior margin of the eyes. This species therefore is in fact provided with a rostrum, as minute as it is, and is closely allied to *Alpheus crinitus* Dana. The eyes project rather much laterally, are rounded and are not armed anteriorly with a tooth or an acute point.

The first and the third joints of the peduncle of the inner antennae have about the same length, whereas the second joint is almost twice as long. According to Stimpson, the second joint is but little longer than the first. This slight difference is certainly to be ascribed to the not quite adult stage of these specimens (confer: de Man, in Archiv f. Naturgeschichte, Jahrg. 53, p. 500, where I described an analogous fact in *Alpheus gracilipes* Stimpson). The external flagellum is a little longer than the peduncle and about half as long as the internal one, which is a little thinner. The basal spine is very short and scarcely projects beyond the middle of the first joint of the peduncle. The peduncle of the outer antennae is a little longer than the peduncle of the internal antennae; the basal joint is unarmed, presenting no basal spine. The scale is short, much shorter than the peduncle and reaches to the distal end of the second joint of the antennular peduncle; the spine into which the lateral margin of the scale terminates, is rather long and projects a little beyond the distal end of the scale. The flagella of the outer antennae are about as long as the animal.

The external maxillipedes project about as far forward as the peduncle of the outer antennae; the terminal joint is ovate, about three times as long as broad, and has its external surface slightly concave and the margins or-

namented with rather long ciliae. The penultimate joint is only half as long as the terminal. In the male the larger chelipede is found on the right side, in the female on the left. The meropodite of the larger chelipede of the male is strongly compressed, the inner surface is even slightly concave. The wrist is short, rounded. The larger hand is a little extroverse. The palm is cylindrical, scarcely a little compressed, and but little higher than broad; it is rounded on the upper as well as on the lower margin, smooth, without notches, and unarmed. The fingers are considerably shorter than the palm, their horizontal length being in proportion to the length of the palm as 3:5. The upper margin of the mobile finger is arcuate and this finger presents the same form as in the allied species. The rounded inferior margin of the chela is somewhat hairy, as also a part of the upper margin, and the fingers are also hairy. The hand of the smaller chelipede is much shorter than the other, scarcely half as long: like the other, it is a little extroverse. The fingers are a little shorter than the palm. The upper margin of the mobile finger is somewhat dilated, and has an acute point. The inner side of this chela is also somewhat hairy.

The larger hand of the female resembles that of the male, but the fingers are a little shorter than half the length of the palm and this hand appears to be less hairy. The other chela is small and shorter than half the length of the larger hand; the fingers are, as in the male, somewhat shorter than the palm, the mobile finger, however, is not enlarged above, and palm and fingers are hairy on the inner side.

Stimpson describes the fingers of the larger hand as shorter than half the length of the palm: as I observed, this is not the case in the male specimen, but the female agrees with Stimpson's definition. The smaller hand of the male is described by Stimpson as presenting half the size of the larger, »valde robusta, digitis palma non bre-

vioribus", these characters are not present in the male, but the smaller hand of the female agrees better with the original description.

As regards their length, the five joints of the carpus of the second pair of legs are in proportion to one another as 3:2:1:1:2; the first joint the longest, the second as long as the terminal, the third and the fourth the shortest. The hand has about the same length as the fifth joint of the carpus and the fingers are slightly longer than the palm.

The three posterior pairs of legs are short and gradually decrease in length and thickness. The meropodites of the legs of the third pair are armed with an acute tooth at the distal end of their inferior margin; those of the fourth pair are also toothed, but this tooth is exceedingly small and easily overlooked. The terminal postabdominal segment is flattened above and armed with two pairs of small spinules in the middle, quite near the lateral margins.

The male is 17 mm. in length, the female 19 mm. from the anterior margin of the cephalothorax to the end of the telson. According to Stimpson, *Alpheus pachychirus* attains however a length of 25 mm.

The indo-pacific species, to which *A. pachychirus* Stimpson is most closely allied, are *A. crinitus* Dana, *A. frontalis* H. M. Edw. and *A. latifrons* A. Milne Edw.

A. crinitus Dana differs by its rostrum of ordinary length, by the two terminal joints of the external maxillipedes being more elongate, by the structure of the carpus of the second pair of legs, the second joint of which is the longest etc.

A. frontalis H. Milne Edw., which occurs in the seas of Australia, is also closely allied, but the anterior margin of the cephalothorax projects more forward, the eyes are more prominent and the external maxillipedes are shorter and less slender.

A. latifrons A. Milne Edw. finally (fig. 15), of which

I have a female specimen from Amboina before me, may be distinguished by the following characters. The anterior margin of the cephalothorax is entire, without even a trace of a rostrum, the eyes are still much more prominent laterally and the inferior margin of the meropodites of the third pair of legs presents no tooth at its distal end. I have shown, two years ago [1]), that the smaller hand of *A. latifrons* presents a somewhat different structure in young males and in the adult: in the latter the fingers are quite as long as the palm, and the mobile finger is much enlarged, in the young males, on the contrary, the palm is distinctly longer than the fingers, and the mobile finger is only very slightly enlarged. The male specimen from Tahiti now presents quite the same differences when we compare it with the adult individual, described by Stimpson.

A. pachychirus Stimpson inhabits the Loo Choo Islands and Tahiti.

Hetairocaris, nov. gen.

A new genus of the Hippolytidae.

The rostrum is short, slender, dentate above; its lower margin is entire and it arises from the anterior fifth part of the cephalothorax. On each side of the rostrum a supraorbital and one single antennal tooth; the fronto-lateral angle of the cephalothorax is rounded. The eye-peduncles are short and thick, the cornea occupies about half the length of the eye-peduncles. The first joint of the peduncle of the inner antennae is somewhat concave above, and the basal spine reaches to the distal margin of the joint. The two following joints are shorter, subcylindrical; the terminal joint supports two short flagella, the external of which is the shorter and much more robust one. The basal joint of the antennal peduncle is armed

1) Archiv f. Naturgeschichte, Jahrg. 53, 1888, p. 524.

with two short spines on the anterior margin of its external surface. The flagella are about as long as or a little longer than the body. Outer foot-jaws elongate. First pair of legs short, stout and equal. Carpopodite short, conical, deeply excavate at its distal extremity. Legs of the second pair slender; carpopodite seven-articulate, with the joints nearly equal in length. Posterior three pairs rather short and stout.

As Stimpson, and lately also Spence Bate, has established several new genera for the species of the old genus *Hippolyte*, I am obliged to create also a new genus for the new species I have to describe. *Hetairocaris* is most closely allied to the genus *Hetairus* Sp. Bate. Both genera present a supraorbital and an antennal tooth on the fronto-lateral surface of the cephalothorax and in both the carpus of the second pair of legs is seven-articulate. In the new genus, however, the carpus of the first pair of legs is short and deeply excavate, quite as in *Hippolyte* s. s. Sp. Bate, the lower margin of the rostrum is entire and the fronto-lateral angle of the cephalothorax is rounded; the outer maxillipedes are also more elongate. The genus *Hippolyte*, as restricted in the beautiful Report on the Challenger Macrura, is armed, like *Hetairocaris*, with a supraorbital tooth, and the carpus of the first pair of legs is also short and deeply excavated, but the carpus of the second pair is triarticulate, the external maxillipedes are shorter, and two antennal teeth seem to occur in this group on the fronto-lateral surface of the cephalothorax.

The genus *Hetairocaris* represents the Atlantic genus *Hetairus* in the Pacific Ocean. [1])

1) Spence Bate thought that the Japanese *Hippolyte rectirostris* Stimps., a species which is closely allied to *Hetairus Gaimardi*, ought to be referred to the genus *Hetairus*, but I may observe that Stimpson makes no mention of the existence of a supraorbital tooth, which, however, is characteristic of the genus *Hetairus*.

40. *Hetairocaris orientalis*, n. sp.

(Pl. 6, fig. 16).

Two ova-bearing females from the island of Ponapé.

This species much resembles in its outer appearance *Hippolyte brevirostris* Dana from the West-coast of North America. The cephalothorax is rounded above and smooth. The short, slender rostrum is laterally compressed and arises with a carina from the anterior fifth part of the cephalothorax; it is directed horizontally forward and does not reach to the distal end of the first joint of the peduncle of the inner antennae. The upper margin is armed with four acute equal teeth, placed on equal distances; the two posterior teeth are placed on the cephalothorax, the two anterior on the rostrum itself. The lower margin is straight and entire. On each side of the second tooth of the rostrum the supraorbital tooth is placed; these supra-orbital teeth are about twice as large as the teeth of the rostrum; they do not reach to the extremity of the third tooth of the rostrum in the larger specimen, whereas they reach to it in the smaller one. The antennal tooth is small, and only half as long as the supra-orbital one; there is no second antennal tooth, and the fronto-lateral angle is rounded.

In both specimens the abdomen is deflexed towards the ventral side. The lateral margins of the antepenultimate segment terminate in an acute tooth, and the posterior margin presents a second tooth which is smaller and less acute, on each side of the middle line, close to the lateral teeth. The penultimate segment is but little longer than the antepenultimate; the lateral margins terminate in an acute tooth and the posterior margin presents two other teeth which are as acute as the lateral. In the species of the genus *Hetairus* figured by Spence Bate, this segment, on the contrary, is considerably longer than the antepenultimate one. All the postabdominal segments are rounded above and smooth, except the telson. The telson

is a little shorter than the two preceding segments taken together, and a little more than once and a half as long as the penultimate segment. The terminal segment is slightly longitudinally concave in the middle and presents two pairs of spinules on the posterior half of the upper surface near the lateral margins. The posterior margin of the telson is armed with a short median, immobile spine in the middle, on each side of which two mobile spines are found; of these spines the inner one is four times as long as the outer, the latter being about of the same size as the median spine. The lateral margins and the posterior margin are ciliate. The uropoda are a little longer than the terminal postabdominal segment, and their basal portions are armed with two small spines above, the outer of which is the larger one.

The eye-peduncles, the half of which is occupied by the cornea, are short and thick and as long as the rostrum. The first joint of the peduncle of the inner antennae is a little longer than the rostrum, and its upper surface is somewhat enlarged and excavated; the slender and acute basal spine reaches the distal end of this joint. The two following joints are short, subcylindrical and together still a little shorter than the first; the penultimate joint is slightly longer than the terminal one. The joints of the antennular peduncle present no spine at their distal extremity, but they are perhaps armed with a few microscopical spinules. The two flagella have the same form as in the genus *Hetairus*; the external one is stout and robust and about as long as the peduncle, but the internal one is slender and thin and twice as long. The peduncle of the external antennae is slightly longer than the antennular peduncle; the basal joint presents two short spines on the anterior margin of its outer side, the lower of which is a little longer than the upper one. The antennal scale is a little longer than the peduncle, and its external margin terminates in a small spinule. The flagella are a little longer than the body.

The external maxillipedes are elongate and project with

their terminal joint beyond the scale of the outer antennae; their penultimate joint is about half as long as the terminal one, and the latter is armed at its distal end with four or five small spinules.

The legs of the first pair extend to the distal end of the antennal scale. The wrist is short, conical, deeply excavated at its distal extremity and covered on its upper surface with a few microscopical spinules. The hands are nearly twice as long as the wrist, the palm slightly longer than the carpus, subterete and rounded, the fingers much shorter than the palm.

The slender legs of the second pair extend a little beyond the antennal scale. The carpus is seven-articulate, the joints presenting at first sight almost the same length. The first or proximal joint, however, is slightly longer than the second, the second a little longer than the third; the third, fourth, fifth and sixth are equal in length, the terminal joint, finally, is again a little longer and as long as the first. The hand is about as long as the two terminal joints of the wrist together, and the palm longer than the fingers.

The three posterior pairs of legs have the ordinary form. The third pair is as long as the second, the following are shorter, the legs of the fifth pair extending only to the distal extremity of the carpus of the first pair.

The larger specimen measures about 40 mm. from the tip of the rostrum to the extremity of the terminal postabdominal segment.

41. *Penaeus Macleayi* Haswell.

Penaeus Macleayi, Haswell, Catalogue of Australian Crustacea, 1882, p. 201.

Two specimens from Sidney.

Whilst this species attains a length of five inches, these two specimens measure scarcely three inches, and I ascribe to this smaller size the fact that the legs are comparatively a little shorter than in the type. According to Haswell, the legs

of the first pair are indeed as long as the antennary scale: in our specimens they reach scarcely to the distal end of the peduncle of the outer antennae. The second pair of legs project with the hands beyond the distal end of the antennal peduncle, but they are still considerably shorter than the antennal scale. The third pair, however, extends with the fingers beyond the antennal scale. The legs of the fourth pair are much shorter than those of the third, and reach scarcely a little more forward than the first pair. The legs of the fifth pair are much longer, they reach nearly as far forward as the antennal scale, but they are still shorter than the legs of the third pair. The three anterior pairs of legs are unispinose at their base. I observe a very small supraorbital spine, which is not mentioned by Haswell; this spinule, however, is very small and disappears probably in the adult. For the rest these two specimens agree perfectly well with Haswell's description. This species is closely allied to *Penaeus avirostris* Dana from Singapore. In Dana's species the teeth of the rostrum extend less far forward, so that the styliform distal end occupies more than half the length of the rostrum; in *Penaeus Macleayi*, however, the styliform unarmed part is shorter than half the length of the rostrum. In Haswell's species five teeth are placed on the rostrum itself and only two on the cephalothorax, in *Penaeus avirostris* Dana two on the rostrum and four on the cephalothorax. The rostrum of *Penaeus Macleayi* is also less elevated at its base than in the species of Singapore.

Middelburg, February 1890.

EXPLANATION OF THE PLATES.

PLATE 3.

Fig. 1. Right or larger hand of the male of *Xantho punctatus* H. Milne Edw., × $^3/_2$.
" 2. Larger hand of the male of *Heteropanope serratifrons* Kinahan, × 3.
" 3. Larger hand of the female of *Pilumnus globosus* Dana, × 2.
" 4. *Pilumnus tahitensis*, n. sp., male, × 2; fig. 4*a*, a part of the under side of a female of the same species, × 6; fig. 4*b*, larger hand of the female, × 4.
" 5. Front-orbital region of the male of *Xenophthalmodes Moebii* Richters, × 10, showing the minute corneae; fig 5*a*, outer foot-jaw, × 5; fig. 5*b*, abdomen of the male, × 5.

PLATE 4.

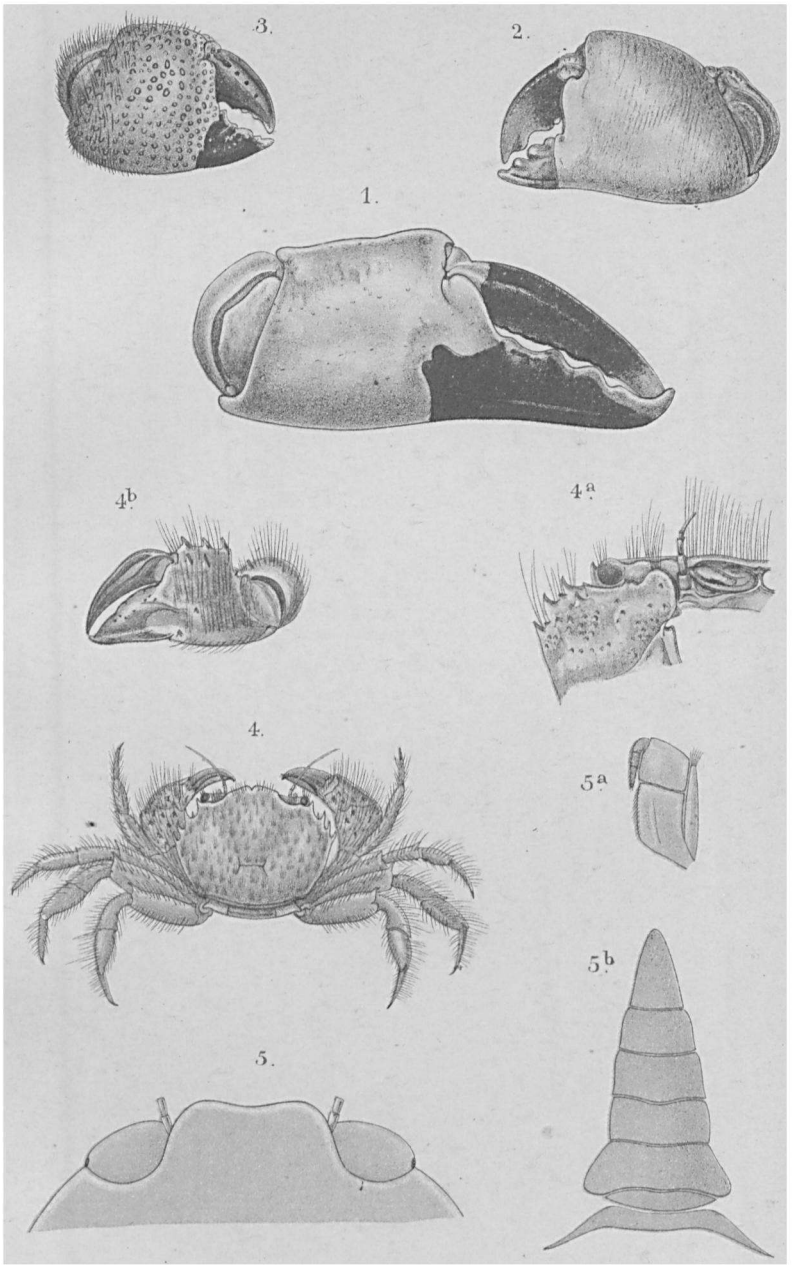
" 6. Cephalothorax of a male of *Geryon trispinosus* Herbst, $^4/_5$ of natural size; fig. 6*a*, inferior view of the front-orbital region, nat. size; fig. 6*b*, anterolateral margin, nat. size; fig. 6*c*, outer foot-jaw, nat. size; fig. 6*d*, three last joints of the male abdomen, × $1^1/_2$.
" 7. Hand of the male of *Macrophthalmus crassipes* H. Milne Edw,, type specimen of the Paris Museum, × 2; fig. 7*a*, hand of the male specimen from the Carolines, × 2, in which the fingers are a little more deflexed and the hiatus between them a little wider.
" 8. Hand of a male of *Macrophthalmus carinimanus* Latr. from Celebes, × 2
" 9. Hand of a male of *Macrophthalmus dilatatus* de Haan, type specimen from Japan, belonging to the Leyden Museum, × 2.
" 10. Hand of the male of *Macrophthalmus pacificus* Dana, × 2.

PLATE 5.

" 11. Male of *Pachygrapsus crassipes* Randall, from the Gulf of California, × $^4/_3$.

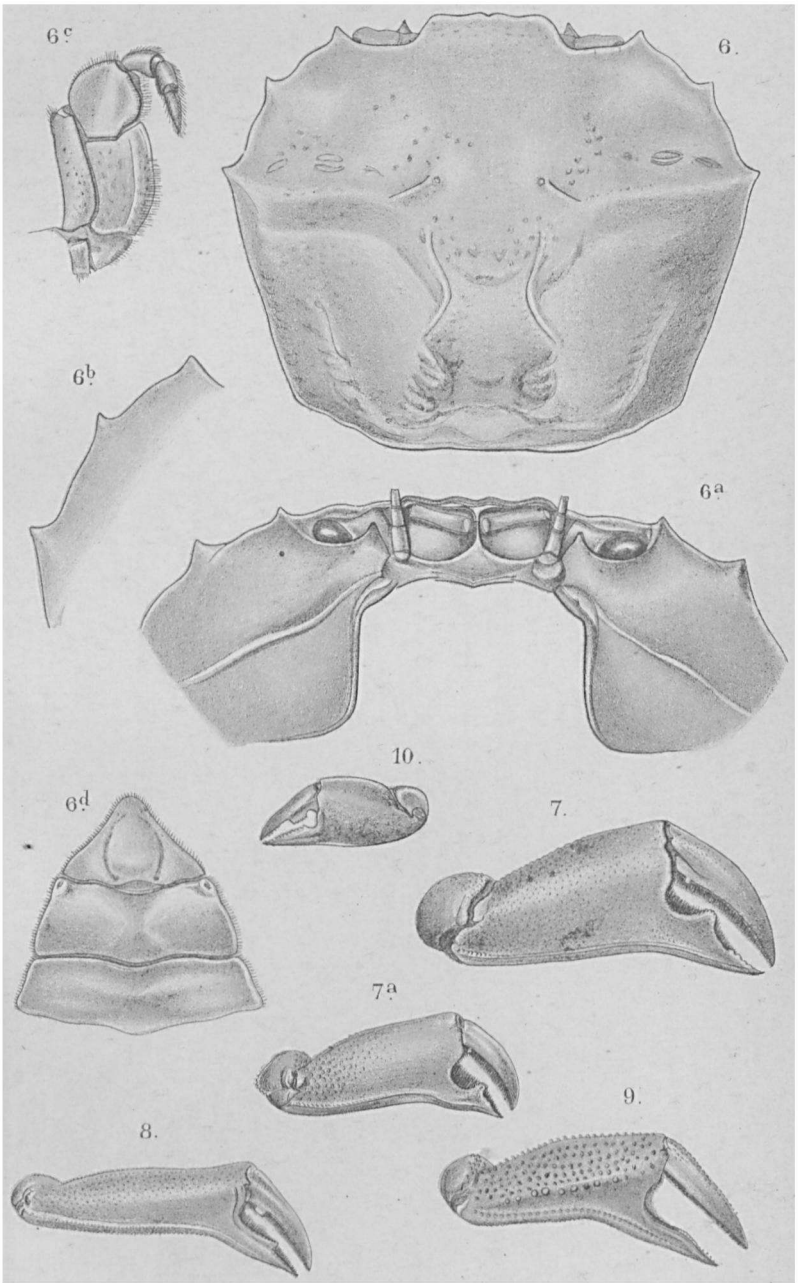
PLATE 6.

" 12. Hand of the male of *Sesarma bataviana*, n. sp., × 3; fig. 12*a*, upper surface of the palm, showing the parallel pectinated ridges, × 3.
" 13. Outer view of the hand of the male of *Sesarma barbimana*, n. sp., × 3; fig. 13*a*, upper surface of the hand, × 3.
" 14. Frontal region and antennae of a female of *Alpheus pachychirus* Stimpson, showing the minute rostrum, × 8.
" 15. Frontal region and antennae of *Alpheus latifrons* A. Milne Edw., female from Amboina, × 8.
" 16. *Hetairocaris orientalis*, nov. gen., n. sp., female, × 3; fig. 16*a*, lateral view of the rostrum and the eye, female, × 6; fig. 16*b*, anterior leg of the female, × 6; fig. 16*c*, leg of the second pair, female, × 6. (The fourth pair of legs has not been figured).



Dr. J. G. de Man del. A. J. J. Wendel lith. P. W. M. Trap impr.

1. Xantho punctatus *H. M. Edw.*
2. Heteropanope serratifrons *Kinahan.*
3. Pilumnus globosus *Dana.*
4. „ tahitensis *de Man.*
5. Xenophthalmodes Moebii *Richters.*



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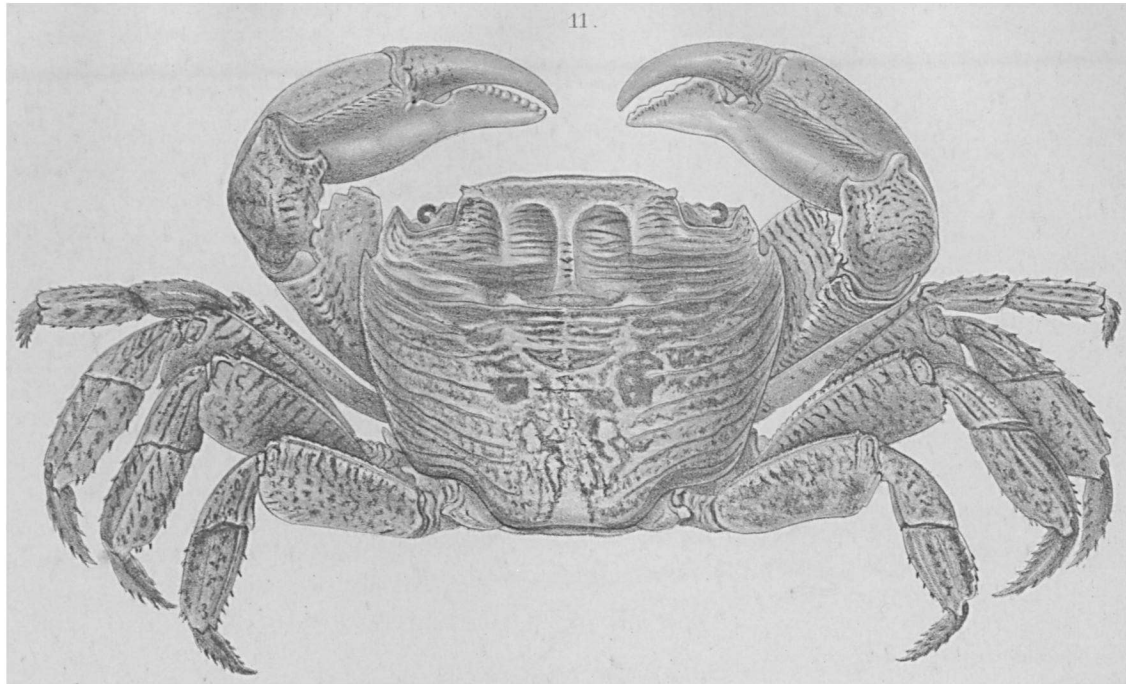
6. Geryon trispinosus *Herbst.*
7. Macrophthalmus crassipes *H. M. Edw.*
8. Macrophth. carinimanus *Latr.*
9. „ dilatatus *de Haan.*
10. Macrophthalmus pacificus *Dana.*



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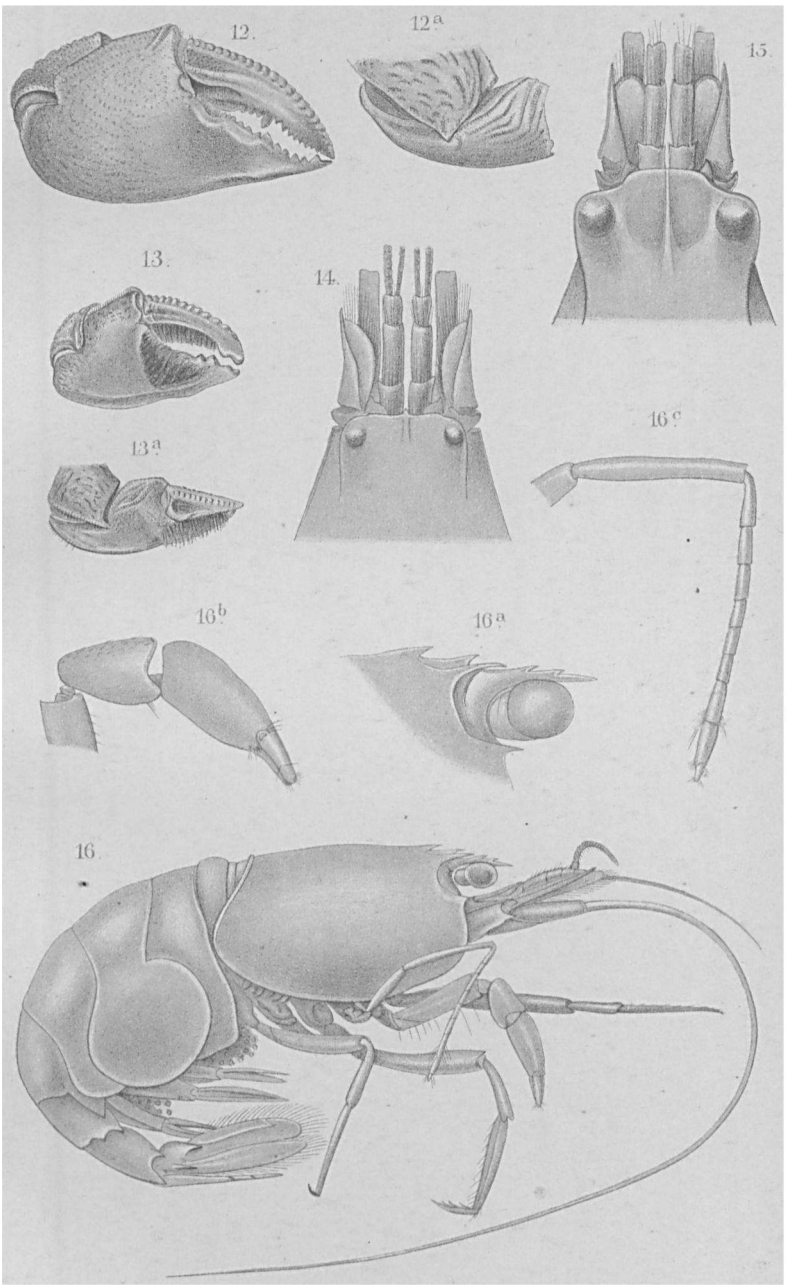
11. Pachygrapsus crassipes *Randall.*



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12. Sesarma bataviana *de Man*. 14. Alpheus pachychirus *Stimpson*.
13. „ barbimana *de Man*. 15. „ latifrons *A. M. Edw.*
16. Hetairocaris orientalis *de Man*.